MEENAKSHI

ACADEMY OF HIGHER EDUCATION & RESEARCH

DEEMED TO BE UNIVERSITY U/S 3 OF UGC ACT, 1956

FACULTY OF PHYSIOTHERAPY

12, Vembuliamman Koil Street, West K.K. Nagar, Chennai – 600 078

CHOICE BASED CREDIT SYSTEM (CBCS)

REGULATIONS

FOR

BACHELOR OF PHYSIOTHERAPY (BPT)

DEGREE PROGRAM

2021-22

PRINCIPAL
FACULTY OF PHYSIOTHERAPY
MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH
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SHORT TITLE AND COMMENCEMENT:

These Regulations shall be called the CBCS regulation for Bachelor of Physiotherapy BPT degree course (2021) of MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH (MAHER) KK NAGAR, CHENNAI

These Regulations would be effective from the academic year 2021-2022

1. **Preamble**

As per the guideline of the University Grants Commission (UGC), in accordance to the letter D.O.No.F.1-1/2015 (CM) dated 08.01.2015 has mandated the implementation of Choice Based Credit System in all Indian Universities which would help in upgrading the educational quality through various developments & educational plans, interactive learning & multilevel assessment frameworks.

Our establishment has initiated many steps in focusing the need for the projects as per the CBCS grants for the BPT program.

2. **CBCS – Definition and advantages:**

Choice Based Credit System is an adaptable arrangement of learning. The distinctive highlights of CBCS are the accompanying:

a. It is an self paced module that is more student friendly

b. It provide opportunities for inter disciplinary & multi-disciplinary learning

c. It has a wide scope of knowledge acquiring platform to obtain various credits at various levels of program.

d. It provides a balanced pace of program in active learning.

e. It enhances the complete skills and reinforces the underutilized potentials of the self.

F. It is designed to provide an continuous assessment module that shall differ from usual methods of appraisal protocols which enhances creative learning abilities.

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3. Definitions of Key Words:

i. Academic Year: Consolidation of one odd & one even semester.

ii. Choice Based Credit System (CBCS): The CBCS offers the candidates to choose various recommended courses (core & elective).

iii. Course: Usually referred as subjects in the program. Courses under the ambit of CBCS shall not exhibit equal weightage. The courses comprise of lectures, lab work, tutorial, clinical rotation/ training or a mix of a portion of these.

iv. Credit Based Semester System (CBSS): Under the CBSS, the award of degree is purely based on the accumulation of desired credits obtained by the candidate in stipulated time as per the norms.

v. Credit Point: It is product of credit & grade point of every subject. Represented as (credit point = Credit x Grade point). It is an evaluation tool & grading baseline for the course.

vi. Grade Point: It is a mathematical distributed weightage assigned to each letter grade on a 10-point scale.

vii. Credit: A unit by which the course work is analyzed. It replicates the course work which is accumulated in the ratio of 1 credit is equal to 1 lecture hour or 2 hrs. of practical or lab work/ 3hrs of clinical training or rotation.

viii. **Semester Grade Point Average (SGPA):** SGPA is a numerical value obtained by the division of total credit point obtained of each semester by total credits of the similar semester.

ix. **Cumulative Grade Point Average (CGPA)**: CGPA is a summative mathematical value acquired by the product of total credits and SGPA of the individual semesters divided by complete credits of the program

x Letter Grade: It is a list of the exhibition of candidate in a said course. Evaluations are denoted by letters O, A+, A, B+, B, C, D and RA

xi. Program me: A module designed to obtain the above said Degree.

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xii. Semester: It represents 15 to 20 weeks duration of the module or not less than 100 working days in six months duration. The odd semester will be from Aug to Jan and even semester from Feb to July.

xiii. Transcript or Grade Card: Based on the grades procured, an evaluation statement will be given to every candidate after each semester. The evaluation statement will show the course subtleties (code, title, number of credits, grade got) along with SGPA and CGPA acquired till that semester.

4. Semesters:

An academic year is split in to two semesters. Odd semester from Aug to Jan & even semester from Feb to Aug

5. **Types of Courses:**

Courses in a program might be of two sorts:

a. Core Course

b. Elective Course

5.1 Core Course: A course, which is mandate for every candidate to undergo throughout the program in each semester. This shall be the core component of the module without which the course shall not be completed.

5.2 Elective Course: A course which can be chosen from a ample of courses that might be specific to the discipline or subject of study or related to empowerment & pertaining to individuals capability & proficiency.

5.2.1 Discipline Specific Elective (DSE) Course: Elective courses offered as an ancillary to the main subject of study are referred as Discipline Specific Elective. The constituent colleges may likewise offer related Elective courses of interdisciplinary nature.

5.2.2 Generic Elective (GE) Course: A course chosen apart from a unrelated discipline, with an expectation to obtain additional knowledge known as a Generic Elective.

5.2.3 Ability Enhancement Courses (AEC): The Courses that enhances & upgrade Knowledge such as Environmental Science and English. These are compulsory for all students.

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5.2.4 Skill Enhancement Courses (SEC): These are value-based and skill-based courses intended to give hands-on-training, competencies & skills

6. LIST OF COURSES IN BPT PROGRAM

s. no	Sem	Code	Courses (compulsory)	No of electives	Electives (Select any one)
	I	CT	Human Anatomy 1 (Cr 4)	1	Introduction to programming in Java (Skill Enhancement) (Cr 2)
		CL	Human Anatomy 1 Practical (Cr 2)		Basic Photography (Skill Enhancement) (Cr 2)
		CT	Physiology 1 (Cr 4)		
		CL	Physiology 1 Practical (Cr 2)		
		CT	General Psychology & Sociology (Cr 4)		
		AE	English and computer applications (2)		
		AE	Basics of nursing and first aid & bed side manners, Patient hospitality (Cr 2)		
	II	CT	Human Anatomy 2 (Cr 4)	1	Infection prevention and control (Ability Enhancement) (Cr 2)
		CL	Human Anatomy 2 Practical (Cr 2)		Soft skill training (Ability Enhancement) (Cr 2)
		CT	Physiology 2 (Cr 4)		
		CL	Physiology 2 Practical (Cr 2)		
		CT	Ethics in physiotherapy and management (Cr 4)		
		DE	Biochemistry (Cr 2)		
		AE	Environmental science (Cr 2)		
s. no	Sem	Code	Courses (compulsory)	No of electives	Electives (Select any one)
	III	CT	Exercise Therapy with soft tissue	1	Disaster risk management (Skill Enhancement) (Cr 2)

			manipulation I (**Cr 4)**		
		CL	Exercise Therapy(Practical) (**Cr 3)**		Culinary skills for ideal Nutrition (Skill Enhancement) (Cr **2)**
		CT	Biomechanics I **(Cr 4)**		
		CT	Microbiology Pathology/Pharmacology **(Cr 4)**		
	IV	**CT**	Exercise Therapy with Soft Tissue Manipulation II **(Cr 4)**	**1**	Nutrition in health and diseases (Generic Elective) (Cr **2)**
		CL	Exercise Therapy with Soft Tissue Manipulation(Practical) **(Cr 3)**		Introduction to visual communication (Generic elective) (Cr **2)**
		CT	Biomechanics 2 (**Cr 4)**		
		CT	Internal Medicine (GM, GS Pediatrics, Geriatrics) **(Cr 4)**		
	V	**CT**	Electrotherapy I **(Cr 4)**	1	Yoga practice (Generic Elective) (Cr **3)**
		CL	Electrotherapy I (Practical) **(Cr 3)**		Basic Life support (skill Enhancement) (Cr **3)**
		CT	Electrotherapy II (**Cr 4)**		
		CL	Electrotherapy II (Practical) **(Cr 3)**		
		CT	Bio-Statistics And Research Methodology (Cr **4)**		
		AE	Basics Physics (Cr **2)**		
		CR	Clinical Training 1 **(Cr 2)**		
	VI	**CT**	Clinical Orthopedics with Traumatology**(Cr 4)**	**NA**	
		CT	Clinical Neurology **(Cr 4)**		
		CT	Clinical Cardio Respiratory conditions (Cr **4)**		
		CT	Women's Health (CL & PT) **(Cr 4)**		
		CL	Women's Health Practical **(Cr 2)**		
		CR	Clinical Training 2 **(Cr 3)**		
	VII	**CT**	Physical function and diagnosis **(Cr 4)**	**1**	Introduction to public speaking (skill Enhancement) (Cr **2)**
		CL	Physical function and diagnosis Practical **(Cr 4)**		Fabrication and fitting of orthotics and prosthetics (skill Enhancement) (Cr **2)**

		CT	Rehabilitation medicine (**Cr 4**)		
		CT	Community medicine & Community physiotherapy **(Cr 4)**		
		CR	Clinical Training 3 (**Cr 3**)		
	VIII	**CT**	Physiotherapy in Orthopedics and traumatology conditions (**Cr 4**)	**NA**	
		CL	Physiotherapy in Orthopedics and traumatology conditions Practical(**Cr 4**)		
		CT	Physiotherapy in Cardio Respiratory conditions (Cr **4**)		
		CL	Physiotherapy in Cardio Respiratory conditions Practical (Cr **4**)		
		CT	Physiotherapy in Neurological Conditions(**Cr 4**)		
		CL	Physiotherapy in Neurological Conditions Practical(**Cr 4**)		
		CR	Clinical Training 4 (**Cr 3**)		
	IX		**Internship (28 cr)**	**NA**	**(28 cr) 180 days/ 7hrs /day**

CT- core theory, CL- core lab, AE- ability enhancement, DE- Discipline elective, CR- clinical rotation

BPT PROGRAM TOTAL CREDITS:

Our BPT CBCS curriculum has been designed with reference to the guidelines of UGC, inputs from experts in the field of Physiotherapy and feedback from stakeholders namely students, teachers, alumni & employers. The program offers total of **200** credits with well-defined learning outcomes.

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TOTAL NUMBER OF COURSES OFFERED UNDER BPT PROGRAM

S. no	TYPE OF COURSE	TOTAL NUMBER
1	Core course	21
2	Ability enhancement (Compulsory)	4
3	Disciplinary elective (Compulsory)	1
4	Skill enhancement (choice based electives)	7
5	Ability enhancement (choice based electives)	2
6	Generic electives (choice based electives)	3
	Total	38

7. Credits:

7.1 Credits will be allotted on the basis of the number of lectures/ tutorial / laboratory work and various types of learning needed, to finish the course content in a 15-20 week plan:

- 1 Credit course = 15 hours of lecture for every semester
- P/T - One credit for every 2 hours of lab or practical (1 credit course = 30 hours)
- CR - One credit for every three hours of Clinical training/ rotation/posting (1 credit course = 45 hours) i e
- 1 credit course = 15 hours of lecture/ Theory
- 1 credit course = 30 hours of practical or lab
- 1 credit course = 45 hours Clinical training/ rotation/posting

8. **Assigning Credit Hours per Course**: The credits will be distributed as below:
   - All core course will be allotted a maximum of 4 credits.
   - All electives will be allotted a maximum of 3 credits
   - All AEC will be allotted a maximum of 2 credits.

Any course that requires more than 4 credit hours can be separated into two courses.

The conceivable blend is proposed underneath. The credits allotted to the course is demonstrated as L:T:P design. The academic committee will frame the guidelines & design for every course.

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9. **Allocating absolute Credits for BPT Program**: As per the UGC guidelines, UG programs for 3 year duration (BSc Honors) shall be allotted not more than 160 credits. In paramedical courses extra credits for internship would be incorporated with at least 15 credits for six months.

9.1 **CREDIT VALUE PER COURSE AND STRUCTURE OF SYLLABUS:**

a) In allocating the credits to a UG course, an organized & structured method will be followed. The Configuration is given below

- Core Theory- 3 to 4 credits- comprise 6 lessons or units
- Core lab- 2 to 4 credits - 10 to 15 experiments/ practical topic
- Discipline Specific elective- 3 credit- comprise 5 lessons or units
- Discipline Specific elective(L)- 3 credit (include 1for practical)- 5 lessons with one lab units
- Generic electives- 3 credits – 4 lesson
- Ability enhancement – 2 credits - 4 lessons or units
- Skill enhancement – 2 credits - 4 lessons or units
- Internship- minimum 15 credits- structured monitoring

Minimal credit allotment for a course is according to the curriculum designed by the department.

10. CBCS Programs Coding System:

S. No.	Faculty Code	UG/PG/ IN/DP	Degree	Program Name	Programme Code	Course Code
1	**PTY**	UG	BPT	Physiotherapy	TUPT	**PT**

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11. Course Numbering pattern: (EXAMPLE)

The course code clarifies the constituent college where the course is offered along with the year and semester in which it is carried. Each course will be allotted a numbered as given below:

course No.	Ten digit course Code	Category	Course title	Lecture L	T/CR	P	Credits (c)
3	UPT21CT101	Core Theory	Anatomy	4	-	-	4
8	UPT21CT107	Core lab	Anatomy	-	-	4	4

12. A model Program coding structure: (EXAMPLE)

s no	Ten digit code	category	Course title	Faculty code	L	T/CR	P	credits	L	P	Total Hrs.
1	UGPT21CT12	Core theory 1	Anatomy	PT	4	-	-	4	60	-	60
2	UGPT21CT14	Core theory 2	Physiology	PT	4	-	-	4	60	-	60
3	UGPT21DE18	Disciplinary elective	Sociology		3	-	-	3	45	-	45
4	UGPT21GE11	Generic elective	Genetics		3	-	-	3	45	-	45
5	UGPT21AE16	Ability enhancement	English		2	-	-	2	30	-	30
6	UGPT21SE24	Skill enhancement	To be chosen by student		2	-	-	2	30	-	30
7	UGPT21CL2	Core Lab	Anatomy	PT	-		4	4		120	120

	6										
		Sem II Total			18	0	4	22	270	120	390

Coding System for Elective/ Ability Enhancement Courses

Elective/ Ability Enhancement Courses college code

s.no	One letter code	Three letter code	College/ Faculty
	M	MED	Medical
	D	DEN	Dental
	N	NUR	Nursing
	P	PTY	Physiotherapy
	A	AHS	AHS
	H	FHS	FHS

13. Category of Elective courses Offered (Example)

s.no	Code No	Course Name	Elective	credit	Sem	Faculty	Dept	UG/ PG
1	AAE 001	English	Ability enhancement- compulsory	2	Odd/ even	FHS	English	UG
2	AAE 002	Environmental science	Ability enhancement- compulsory	2	Odd/ even	Eng.	Eng.	UG
3	AGE 003	Air way Management	Generic elective	1	Odd/ even	AHS	AHS	UG
4	AGE 004	First aid & splinting	Generic elective	1	Odd/ even	Emergency trauma care	Emergency trauma care	UG

5	AGE 004	Food & Nutrition	Generic elective	1	Odd/ even	Cl. Nutrition	Cl. Nutrition	UG
6	AGE 005	Basics of Yoga	Generic elective	1	Odd/ even	Yoga	Yoga	UG
7	AGE 006	Pranayama	Generic elective	1	Odd/ even	Yoga	Yoga	UG
8	BGE 006	Basic Computing	Generic elective	1	Odd/ even	Bioinformatics	Bioinformatics	UG
9	TSL001	Ergonomics & health promotion	Skill enhancement	2	Odd/ even	Physiotherapy	Physiotherapy	UG
10	NSL001	Diabetic Foot care	Skill enhancement	2	Odd/ even	Nursing	Nursing	UG
11	ASL001	Basic life support	Skill enhancement	2	Odd/ even	Accident & Emergency	Accident & Emergency	UG
12	MGE001	Team building & leadership	Generic elective	2	Odd/ even	Management		UG
13	AAE007	Medical Ethics & law	Ability enhancement	2	Odd/ even	General medicine		UG

14. Selection of Generic Elective and Skills Enhancement courses:

The understudies ought to apply in the recommended design and should arrive at the CBCS facilitator before the beginning of the semester. A menu made under the University site perhaps got to for online pre-enrollment. All applicants should enlist online for the courses of the said semester regardless of whether the program doesn't give an elective to the said semester.

14.1 Elective courses from Swayam/NPTEL stage [www. https://swayam.gov.in and http://nptel.ac.in] possibly remembered for the above pool as and when required

15. Generic Elective and Skilled Enhancement Course – Tentative time Table for odd /even semester

WEEK TIME TABLE

Days	9-10	10-11	11-12	12-1	1-2	2-3
Mon						
Tue						

Wed						
Thurs	**GE**	**GE**	**GE**	**GL**	**GL**	**GE**
Fri						
sat				**SE**	**SE**	**SL**

Every Thursday will be allotted for elective courses & Saturday for Skill enhancement course (theory & lab)

16. **Internal Evaluation :**

According to the standards in the curriculum the IA tests will be conducted for both core and elective subjects

17. Examinations and Assessment

Faculty of Physiotherapy has adopted the UGC recommendation for awarding the grades based on CGPA .

Letter Grades and Equivalent Grade Point

Letter Grade	**Grade Point**	**Remarks**	**Range of Marks**
O	10	Outstanding	86-100
A+	9	Excellent	70-85
A	8	Very Good	60 -69
B+	7	Good	55 -59
B (Pass for BPT)	6	Pass	50- 54
F / RA	0	Fail/ Re-appear	Below 40
Ab	0	Absent	Reappear
NE	0	Not Eligible	Detained
RC	0	Repeat the Course	Repeat the Course

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Cumulative Grades and Grade Points

Grade Point	Letter Grade	CGPA
10	O (Outstanding)	9.01 - 10.00
9	A+ (Excellent)	8.01 – 9.00
8	A (Very Good)	7.01 – 8.00
7	B+ (Good)	6.00 - 7.00
6	B (Above Average) Pass	5.01 - 6.00
5	C	4.51 – 5.00
4	D	4.00 - 4.50

Anyway for undergraduate program, the pass percentage is fixed as grade B (50%)

18. **Assessment of a Course**:

Assessment for a course will be done on a continuous basis. The uniform procedure as stated by the UGC for CBCS will be adopted, at least 3 CIA followed by one end semester exam for each course will be offered.

19. **Eligibility to show up for the end-semester assessments for a course incorporates**:

A candidate shall possess (80%) of Attendance and 50% of CIA to be eligible for appearing in semester exam. Failing which the candidate shall be declared as not eligible.

20. **Grade Qualifying For a Pass**:

Candidate should acquire a minimum of 50% marks in all courses that includes both core & electives in end semester examination. At least 50% of marks in CIA is needed as eligibility to appear in end semester exam. .

21. Guidelines for Clinical Internship:

Clinical internship for six months may allow the candidate to take up entry level position just on successful completion of final semester.

21.1 **Evaluation of internees and grant of credits**:

The credits and hours of internship will be defined as per the guidelines in the curriculum (28 credit Points). Award of the degree will be given after fruitful finish of

the internship alongside a declaration of consummation of internship from HOD and Grade Card for the similar.

22. ATTENDANCE

- The faculty dealing with CBCS course will be responsible for maintaining the attendance record of the students who have enrolled for the course.
- All faculty handling shall report to the Head of the Department/ Principal about the candidates who have short fall of attendance.

23. Computation of SGPA and CGPA

The UGC prescribes the accompanying method to figure the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

Computation of SGPA EXAMPLE

s. no	Semester 1	Credits	Letter grade	Grade Point	Credit point
1	CT 1	4	A+	9	36
2	CT 2	4	B+	7	28
3	CL 1	4	C	5	20
4	CL 2	4	O	10	40
5	AEC 1	2	A	8	16
6	GE 1	1	A	8	8
7	SE 1	1	B	6	6
	Total	20			154
				SGPA 7.7 (154/20)	

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Thus SGPA is calculated for all the semester of the program and represented as below listed

Semester 1	Semester 2	Semester 3	Semester 4
Credit: 20 SGPA: 7.9	Credit: 22 SGPA: 7.8	Credit: 25 SGPA: 5.6	Credit: 26 SGPA: 5.0
Semester 5	Semester 6		
Credit: 26 SGPA: 7.3	Credit: 25 SGPA: 9.0		

Thus CGPA = (20x 7.9 + 22x7.8+25x 5.6+26x5.0+26x7.3+25x9.0)/200 = 7.24

CGPA is a summative mathematical value acquired by the product of total credits and SGPA of the individual semester divided by complete credits of the program

25. **Transcript (Format)**: Based on the above suggestions on Letter grades, grade points and SGPA and CGPA, the higher education institutes may issue the transcript for every semester and a consolidated transcript indicating the performance in all semesters.

SAMPLE GRADE CARD

s. no	Course code	Course	Credits	Letter grade	Result
1	UPT21CT102	Anatomy	4	A+	Pass
2	UPT21CT104	Physiology	4	B+	Pass
3	UPT21CT152	Biochemistry	4	C	RA
4	UPT21DE108	Sociology	2	O	Pass
5	UPT21GE110	Genetics	2	A	Pass
6	UPT21AE112	English	2	A+	Pass
7	UPT21SE114	Psychology	2	B	Pass
8	UPT21SE152	Basic life support	2	B+	Pass
9	UPT21AE118	Basics of nursing and first aid	1	O	Pass
10	UPT21AE116	Basics Physics	1	A	Pass
11	UPT21AE120	Environmental science	1	B	Pass

		Credit & grade point (current semester)		**Credit & grade point (up to current semester)**	
	Credit Registered	**25**		**25**	
	Credit earned	**21**		**21**	
	Grade point Average (GPA)	**6.19**		**6.19**	

24. STUDENT ADVISOR

- Each undergraduate will have an individual from workforce of the Department as his/her understudy counsel. The understudy consultant/guide, other than dealing with the directing and care of the designated understudies, will likewise exhort the understudies in picking Elective courses and offer all conceivable understudy support administrations.

25. CARRY OVER OF "RA" GRADE COURSE(S) (Reappearance)

- Students are permitted to carry over the "RA" Grade course(s) from any semester till third year of study (sixth semester).
- A candidate should pass all the 1st, 2nd, 3rd, 4th,5thand 6th semester courses before entering to 7th semester.
- A candidate is permitted to undergo internship only after passing all the courses in 7th & 8th semester.

26. CLASSIFICATION OF SUCCESSFUL CANDIDATES:

In accordance to the CGPA & grade point system as mentioned earlier in the frame work the candidate will be declared successful.

27. Coordinator of CBCS and CBCS Co-Coordinating Committee:

The Coordinator (CBCS) will supervise all CBCS programs as per the norms.

SCHEME OF EXAMINATION

Paper	Subjects	Internal Assessment	University Theory	Viva	Practical	Total
	Semester I					
1.	Anatomy 1	30	100	20		150
2.	Physiology 1	30	100	20		150
3.	Psychology/sociology	50	100	-	-	150
4	English and computer applications	50	50	-	-	100
5	Basics of nursing and first aid & bed side manners, Patient hospitality	50	50	-	-	100
	ELECTIVES					
6	Introduction to programming in Java (Skill Enhancement)	50	50	-	-	100
7	Basic Photography (Skill Enhancement)	50	50	-	-	100
	Semester II					
1	Anatomy 2	30	100	20	50	200
2	Physiology 2	30	100	20	50	200
3	Ethics in physiotherapy and management	50	100			150
4	Biochemistry	50	50	-	-	100
	Environmental science	50	50	-	-	100
	ELECTIVES					
	Infection prevention and control (Ability Enhancement)	50	50	-	-	100
	Soft skill training (Ability Enhancement)	50	50	-	-	100
	Semester III					
1.	Exercise Therapy with Soft Tissue Manipulation 1	30	100	20	50	200
2.	Bio- Mechanics And Applied Anatomy &Kinesiology 1	30	100	20	-	150
3.	Microbiology & Pathology/Pharmacology	50	100			150
	ELECTIVES					
4.	Disaster risk management (Skill Enhancement)	50	50	-	-	100
5.	Culinary skills for ideal Nutrition (Skill Enhancement)	50	50	-	-	100
	Semester IV					

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1.	Exercise Therapy with Soft Tissue Manipulation 2	30	100	20	50	200
2.	Bio- Mechanics And Applied Anatomy &Kinesiology 2	30	100	20	-	150
3.	Internal Medicine (General Medicine / General Surgery / Pediatrics/Geriatrics	30	100	20	-	150
	ELECTIVES					
4.	Nutrition in health and diseases (Generic Elective)	50	50	-	-	100
5.	Introduction to visual communication (Generic elective)	50	50	-	-	100
	Semester V					
1.	Electrotherapy I	30	100	20	50	200
2.	Electrotherapy II	30	100	20	50	200
3.	Bio-Statistics And Research Methodology	50	100		-	150
4.	Basics Physics	50	50	-	-	100
	Clinical Training 1					
	ELECTIVES					
	Yoga practice (Generic Elective)	50	50	-	-	100
	Basic Life support (skill Enhancement)	50	50	-	-	100
	Semester VI					
1.	Clinical Orthopedics with Traumatology	30	100	20	-	150
2.	Clinical Neurology	30	100	20	-	150
3.	Clinical Cardio Respiratory conditions	30	100	20	-	150
4.	Women's Health	30	100	20	50	200
5.	Clinical training					
	Semester VII					
1.	Physical function and diagnosis	30	100	20	50	200
2.	Rehabilitation medicine	30	100	20	-	150
3.	Community medicine & Community physiotherapy	50	100		-	150
4.	Clinical Training					
	ELECTIVES					
5.	Introduction to public speaking (skill Enhancement)	50	50	-	-	100
6.	Fabrication and fitting of orthotics and prosthetics (skill Enhancement)	50	50	-	-	100
	Semester VIII					
1.	Physiotherapy in Orthopedics and traumatology conditions	30	100	20	50	200
2.	Physiotherapy in Neurological Conditions	30	100	20	50	200

3.	Physiotherapy in Cardio Respiratory conditions	30	100	20	50	200
4.	Clinical Training					

EXAMINATION SCHEME FOR COURSES WHEREIN THEORY AND LAB ARE ASSESSED JOINTLY

- As per the regulation, the student should pass both theory & practical examination [result in Group] to earn the credits whenever indicated for a course.
- A candidate has to obtain the passing minimum (50% for UG) in both theory & practical exam separately, in order to be declared passed in individual courses.

PATTERN OF QUESTION PAPER IN UNIVERSITY EXAMINATION FOR ELECTIVES

Section A	2 Essays (any 1)	1 x 15 Marks each	15 Marks	50 Marks	
	6 Short Notes (any 5)	5 x 5 Marks each	25 Marks		
	5 Ultra short notes	5 x2 Marks each	10 Marks		
	Internal Assessment			50	Marks
			Total	100	Marks

Minimum for Passing
50% marks in the University written examination
50% marks internal assessment

TIME DURATION OF UNIVERSITY EXAMINATION FOR ELECTIVES

University examination for electives will be conducted for 1and ½ hour for 50 marks

PATTERN OF QUESTION PAPER IN CONTINIOUS INTERNAL ASSESSMENT FOR ELECTIVES

Section A	2 Essays (any 1)	1 x 15 Marks each	15 Marks	50 Marks	
	6 Short Notes (any 5)	5 x 5 Marks each	25 Marks		
	5 Ultra short notes	5 x2 Marks each	10 Marks		
			Total	50	Marks

Minimum for Passing in internal assessment

- 50% marks internal assessment

Time Duration of internal assessment for electives

- 1 hour & 30 mins

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BPT PROGRAM OUTCOMES

Upon completion of graduate program in physiotherapy, the student should:

PO1- Obtain appropriate knowledge of the fundamental medical subjects in the practice of physiotherapy
PO2- Establish the skills and techniques to apply the therapeutic exercises, soft tissue manipulation and electrotherapy modalities for the management of various clinical conditions.
PO3- Foster legitimate skill the attitude of care and concern in physiotherapy practice.
PO4 – To show proficiency and skill in teaching, management, research, guidance and counseling.
PO5 - Practices principles and ethical values

BPT PROGRAM SPECIFIC OUTCOME

PSO1-Will develop an ability to influence the knowledge of physiotherapy in the community

PSO2- Foster educational experience for capability enhancement in the profession and advance prevention in the health of an individual.

PSO3-Profeciency in solving problems using research knowledge and methods to frame goals for the purpose of rehabilitation

CO & PO MAPPING

I Year	**Anatomy**	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Explain the knowledge of human anatomy that is necessary for the study and practice of physiotherapy.	3	1	1	3	-	2	3	2
CO 2	Illustrate the structure of bones, joints, muscles, brain, cardio pulmonary and nervous systems	3	1	1	3	-	1	2	2

	Physiology/Elements of Biochemistry	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Acquire knowledge on fundamentals of human physiology	3	1	1	3	-	2	3	2
CO 2	Describe the function of endocrine system, reproductive system, digestive system and muscular system	3	2	1	3	-	1	2	2
CO 3	Explain the knowledge of	3	1	-	-	-	1	2	2

	basics in human biochemistry.								
CO 4	Describe the elementary of normal human biochemical processes.	3	1	-	-	-	1	2	2

	Psychology/ Sociology	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Describe the role of family and community in the development of behaviours and human personality.	3	-	3	1	3	2	3	2
CO 2	Understand the role of beliefs and values as determinants of individual and group behaviours.	3	-	3	1	3	2	3	2
CO 3	Knowledge about the community's social and economical aspects that influence the people's health.	3	-	3	2	3	2	3	2
CO 4	Knowledge about the significance of social interactions in the process of rehabilitation.	1	-	2	3	3	2	3	2
CO 5	Perform the role of therapist as an effective member in the society	2	-	1	3	3	3	3	3
CO 6	Understand the psychological factors associated with disability and unconscious patients, chronic illness, death, clinical conditions.	3	-	1	2	1	3	3	3
CO 7	Knowledge about the basic behavior to apply in the therapeutic environment	3	3	-	2	-	3	2	3
CO 8	Develop an Understanding about specific psychological factors and its effects in physical illness	2	-	2	2	-	3	2	3
CO 9	Develop a holistic approach with dealing patients at the time of admission, treatment, rehabilitation and follow up.	1	1	3	2	3	3	2	3

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	Microbiology & Pathology/Pharmacology	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Explain the knowledge of Microbiology & Pathology/Pharmacology that is necessary for the study and practice of physiotherapy.	3	1	-	3	2	2	3	2
CO 2	Describe the pathophysiology of endocrine system, reproductive system, digestive system and muscular system	3	2	-	3	2	2	3	2

	English and computer applications	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Develop the efficiency to Speak English fluently with grammatically correct sentences.	3	-	-	-	3	3	3	-
CO 2	Develop the efficiency to write English.	-	-	-	3	-	3	-	-
CO 3	Apply the basic computer skills for web surfing in research, relevance to the field of physiotherapy	3	-	-	-	3	3	3	-
CO 4	Establish working knowledge of hardware and software relevant to physiotherapy practice	2	-	-	3	-	3	-	-

	Basic of nursing and first aid	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Develop an understanding and demonstrate about principles of First aid	3	3	1	1	3	3	2	3
CO 2	Demonstrate skill in applying First aid treatment during emergencies	2	3	1	3	1	3	3	3

II year	**General Medicine/General surgery/Pediatrics/Geriatric**	PO 1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2	PSO 3

	s								
CO 1	Understand the causes of various major conditions and management in relation with physiotherapy.	3	3	1	2	1	2	3	1
CO 2	Understand the basic surgical procedures and the aftermath complications and Related physiotherapy managements.	3	2	1	3	1	2	3	1
CO 3	Able to gain knowledge about the preliminary pediatric conditions, it merits and demerits and the treatment thereafter.	3	2	1	3	1	2	3	1
CO 4	Gain adequate knowledge about the senile population and there needs and exercise prescription for these special population.	3	3	1	3	1	2	3	1
CO 5	Use the gained knowledge in applied and advanced research.	2	1	1	3	1	2	3	1

	Exercise Therapy with soft Tissue Manipulation	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Analyze and apply various types of therapeutic exercise and movements.	3	3	1	2	1	3	2	3
CO 2	Develop the Knowledge for the clinical measurements of Range of motion, interpret them for rehabilitation.	3	3	1	3	1	3	2	3
CO 3	Knowledge about manual muscle testing and developing the ability to assess muscle power and interpret.	3	3	1	3	3	1	2	3
CO 4	Understand the principles, technique and the effects of exercises to restore physical function.	2	3	2	2	3	2	2	3

	Bio-Mechanics and Applied Anatomy Kinesiology	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	To acquire knowledge on the basic principles of	3	2	-	-	-	1	3	2

	biomechanics based on anatomy of relevant joint structure and function.								
CO 2	To develop an understanding of kinetics and kinematics of each joint in both extremities and spine.	3	2	-	-	-	1	3	2
CO 3	To adequately apply the biomechanical principles to identify the path mechanics of dysfunctions of joints, structure and function.	2	3	-	3	-	1	3	2
CO 4	To prevent, protect and rehabilitate various dysfunctions using the biomechanical principles.	2	2	3	3	3	1	3	2

	Electrotherapy I	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Describe the fundamental of physics in the application of electrotherapy and describe the Production &Physiological effects Therapeutic uses, indication &contraindications of various low/medium Frequency Currents.	3	1	-	2	2	3	2	3
CO 2	Understand about the physiology of pain, theories of pain, levels of pain modulation, selection of appropriate modality for Pain modulations.	3	3	-	2	2	3	2	3
CO 3	Explain principles and effects, dangers, safety measures, indication &contraindications, methods of application of various low/medium Frequency modalities	2	3	3	2	1	3	2	3
CO 4	Illustrate and demonstrate the purpose of Assessment & Treatment on various clinical significance in restoring	1	3	2	3	2	3	2	3

	physical function in the practice of physiotherapy.								

	Electrotherapy II	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Acquire the knowledge of fundamental of physics and its application in electrotherapy and describe the Production &Physiological effects, Therapeutic uses, indication &contraindications of various high frequency currents.	3	3	1	3	2	3	2	3
CO 2	Acquire various knowledge pertaining to physiology of pain, theories of pain, levels of pain modulation and selection of appropriate modality for Pain management.	3	3	1	3	1	3	2	3
CO 3	Acquire the skills of application in Assessment & Treatment of various clinical conditions.	2	3	1	3	2	3	2	3
CO 4	utilize various modalities in promoting good treatment outcome.	1	3	1	3	1	3	2	3
CO5	Apply the gained knowledge for a good evidence based research.	2	2	1	3	3	3	2	3

	Basics of Physics	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Understand the fundamentals of sciences, its principles, laws and theories, properties of matter, energy, light, electromagnetism etc.	3	1	-	-	-	1	-	1
CO 2	Recognize how the basics of physics can help in addressing the	2	2	-	1	-	-	1	-

	phenomena in relate to their majors								
CO 3	Analyze the working of the various electrotherapeutic low, medium and high frequency equipment's	-	3	-	3	1	1	-	1
CO 4	Apply the concept of working and its functions effectively in multidisciplinary teams	2	3	-	1	-	-	1	1

	Environmental Sciences	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Knowledge about the effects and uses of natural resources and eco systems.	2	2	1	3	3	3	3	3
CO 2	Explain the interdisciplinary context of environmental issues.	3	3	-	3	3	3	3	3
CO 3	Adapt sustainability as a practice in life, society and industry	2	2	3	3	2	2	2	2
CO 4	Acquire and create an action plan for sustainable alternatives that integrate science, humanist, and social perspectives.	1	3	2	3	2	1	3	2

III Year	**Clinical orthopedics with Traumatology**	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	To understand the basic orthopedic conditions causing musculoskeletal conditions	3	2	3	2	-	2	3	3
CO 2	Ability to understand skills in effective diagnosis of various disabilities	-	3	2	2	-	2	3	3
CO 3	Able to differentially diagnosing various MSD and in ruling out other non related conditions	3	-	3	-	3	2	3	3

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	Clinical Neurology	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Acquire knowledge on the basics of nervous system, neuro-muscular system anatomically and physiologically, its primary & secondary clinical characteristics.	3	1	2	1	1	2	3	3
CO 2	Acquire knowledge to explore on various Neurological &Pediatric conditions. conditions, its clinical significance , pharmacological and surgical management	3	2	1	1	2	2	3	3
CO 3	Offer an opportunity in ruling in clinical investigations and clinical diagnosis	3	2	1	1	2	2	3	3
CO 4	Demonstrate the skill in application of clinical examination on neurological dysfunctions in both neurological and pediatric diseases	2	3	2	2	1	2	3	3

	Clinical cardiology	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Access the fundamental knowledge on the basics of cardiopulmonary system, anatomically and physiologically, its primary & secondary clinical characteristics.	3	1	2	1	1	2	3	3
CO 2	Understand the etiology, Classification, Pathology, Clinical Features, signs and symptoms appropriate Investigations, Complications, Surgical & Non-Surgical Management of various cardiorespiratory Conditions.	3	2	1	3	1	2	3	3
CO 3	Incorporate the clinical	3	3	1	1	1	2	3	3

	findings and able to understand and estimate the proper investigations skill.								
CO 4	Establish the required clinical information about the cardiorespiratory conditions which commonly cause disability and their management.	3	2	1	3	1	2	3	3
CO5	Demonstrate the skill in application of clinical examination on cardiopulmonary dysfunctions in both adult and pediatric cardio pulmonary diseases	3	3	2	3	1	2	3	3

	Clinical obstritics and gynecological conditions	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Familiarity with anatomy, physiology and pathophysiology of female reproductive system.	3	2	1	2	1	2	3	3
CO 2	Describe the physiology of menstrual cycle, puberty and menopause.	3	1	1	2	1	2	3	3
CO 3	Explain normal and abnormal bleeding, common problems in obstetrics and gynecology and common breast conditions and outline the evaluation of breast complications.	3	1	1	2	1	2	3	3
CO 4	Acquire Knowledge of intrapartum care and postpartum care of the mother and newborn.	3	1	2	2	2	2	3	3

	Explain normal physiological changes of pregnancy and describe common complications during pregnancy.	3	1	2	2	2	2	3	3

	Community medicine	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Describe the effect of social and environmental factors on an individual's health and society.	2	-	2	3	3	3	3	3
CO 2	Describe the influence of the environment and the community dynamics individual's health.	2	-	2	3	3	3	3	3

	Community Physiotherapy	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Describe physiotherapist's role in community's health promotion and women's health.	3	3	3	3	2	3	3	3
CO 2	Understand about the fitness training for geriatric population.	2	3	3	3	3	3	3	3
CO 3	Determining the need of physiotherapy in a industrial set up and formulate an ergonomic treatment.	2	3	3	3	3	3	3	3

	Bio-Statistics and research Methodology	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	To identify various phases in Research process.	3	1	1	2	1	1	1	3
CO 2	To apply statistical procedures in Research.	2	1	1	1	1	1	1	3
CO 3	To analyze the significance in testing procedures.	2	1	2	1	1	1	1	3

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CO 4	To evaluate the importance of Research in Physiotherapy.	1	1	2	3	3	1	1	3

	Basic life support	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	The basic knowledge to recognize a life-threatening emergency and provide life support.	3	1	1	-	-	3	2	-
CO 2	Assess and address the emergency situation and provide the effective rescue technique.	3	1	1	-	-	3	2	-
CO 3	identify the restriction of involvement of breathing through proper examination.	3	1	1	-	-	3	2	-
CO 4	assess the individual and proceed further in chain of survival.	3	1	1	-	-	3	2	-
CO5	Demonstrate and provide effective chest compressions and manage victims of chocking.	3	1	1	-	-	3	2	-

	Yoga	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Understand the principles of yoga therapy for different disease.	3	2	2	-	-	3	2	-
CO 2	Explain the interdisciplinary context of yoga therapy.	3	2	2	-	-	3	2	-
CO 3	Acquire awareness of yoga as a practice in life, society and community	3	2	2	-	-	3	2	-

	Physiotherapy in neurology	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Identify the impairments of various neuro-muscular and pediatric disorders, its pathophysiology and clinical manifestation and management.	3	2	1	3	1	3	2	3

CO 2	Illustrate and demonstrate appropriate physiotherapy assessment tools and principles of various Neuro-physiotherapeutic approaches	1	3	2	3	2	3	2	3
CO 3	Offer an opportunity in clinical reasoning and clinical decision making to ensure a holistic approach in evaluating the client's problems	1	1	3	3	3	3	2	3
CO 4	Apply skills in the approach of communication with clients, relatives, society and co-professionals, to promote physical functions of an individual and community.	1	3	3	3	3	3	2	3

	Physiotherapy in Orthopedics	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Understand relevant physiotherapy assessment techniques which will help to diagnose various orthopedic conditions	1	1	3	3	3	3	2	3
CO 2	Able to identify disability due to musculoskeletal dysfunction, set treatment goals and apply their skills in clinical situation to restore musculoskeletal function.	1	3	3	1	1	3	2	3
CO 3	Develop proficiency in integrating clinical assessment with theoretical knowledge	3	1	3	1	1	3	2	3
CO 4	Establish clinical decision making ability in treating different musculoskeletal conditions	2	3	1	3	1	3	2	3
	Establish physiotherapeutic measures in treating musculoskeletal	1	3	3	1	2	3	2	3

	conditions & modify physiotherapeutic intervention as required.								
	Obtain ethical skill by demonstrating safe, respectful and effective performance of Physical handling techniques taking in to account the patients clinical condition, need for privacy, the resource available and the environment	1	1	3	2	3	3	2	3

	Physiotherapy in **CARDIO RESPIRATORY CONDITIONS**	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Able to assess the clinical dysfunction and disability in the clinical conditions. Identify the impairments of various cardiopulmonary disorders, its pathophysiology and clinical manifestation and management.	3	3	1	3	1	3	2	3
CO 2	Incorporate the clinical findings with the pathophysiological concepts and inculcate the appropriate assessment.	3	3	1	3	1	3	2	3
CO 3	Illustrate and demonstrate appropriate physiotherapy assessment tools and principles of various cardiopulmonary-physiotherapeutic approaches	3	3	2	3	3	3	2	3
CO 4	Offer an opportunity in clinical reasoning and clinical decision making to ensure a holistic approach in evaluating the client's problems	3	2	2	2	3	3	2	3

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CO5	Use of effective therapeutic technique in cardiopulmonary, thus enabling them to apply the required skill in the clinical condition.	3	3	1	3	1	3	2	1

	Physiotherapy in Obstetrics and gynecology	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Outline the fundamental knowledge in anatomy and physiology of female reproductive system and describe the procedures of obstetrics & Gynecological surgeries.	3	2	1	2	1	3	2	3
CO 2	Demonstrate the application of perineometer, vaginal cones, Swiss ball & electrotherapy modalities in the assessment and management of obstetrics and gynecological conditions.	1	3	1	3	2	3	2	3
CO 3	Demonstrate various treatment techniques specifically appropriate for each condition in obstetrics and gynecology. Prepare and explain the antenatal and postnatal classes.	2	3	2	3	2	3	2	3
CO 4	Acquire a sound knowledge Of the specialized skills of the physiotherapeutic interventions with special emphasis on the respective areas of specializations.	1	3	1	3	3	3	2	3

	Apply the knowledge and principles of the basics to assess and manage women with obstetrics and gynecological conditions from physiotherapy perspective.	2	3	3	3	3	3	2	3

	Physical and functional diagnosis	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Understand the use of appropriate tools or instruments of assessment in Musculoskeletal, Neurological and Cardio-vascular conditions.	1	3	2	1	1	3	2	3
CO 2	Interpretation and analysis of assessment and findings.	1	3	3	1	1	3	2	3
CO 3	Demonstrate skills of manual therapy in musculoskeletal conditions, neuro therapeutics and cardiovascular and respiratory physiotherapy skills in appropriate clinical condition as needed	1	3	3	1	1	3	2	3
CO 4	Proficiency in Selecting appropriate Physiotherapy assessment & treatment techniques to facilitate safety, sensitive practices in patient comfort and effectiveness	2	3	3	1	1	3	2	3
CO5	Obtain ethical skill by demonstrating safe, respectful and effective	1	1	3	2	3	3	2	3

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	performance of Physical handling techniques taking in to account the patients clinical condition, need for privacy, the resource available and the environment								

	Rehabilitation medicine	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	To acquire knowledge on rehabilitation, its types and evaluation of various types of disabilities.	3	3	2	2	1	3	2	3
CO 2	To demonstrate concept of team approach on rehabilitation and apply principles of therapeutic techniques for physical dysfunctions and disabilities.	1	3	3	3	3	3	2	3
CO 3	To identify existing capabilities in patients with varying grades of disabilities.	1	2	1	1	2	3	2	3
CO 4	To demonstrate skills in using supportive devices for rehabilitation of various physical disabilities for independent activities of daily living.	1	3	3	3	3	3	2	3

	Ethics, Administration and management	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	To understand the moral values and meaning of ethics	1	3	3	2	3	3	2	3
CO 2	To learn and apply ethical code of conduct in fields of clinical practice, learning, teaching, research and physiotherapist-patient relationship	1	1	3	3	3	3	2	3
CO 3	Acquire bedside manners and communication skills in relation with patients,	1	2	3	3	3	3	2	3

	peers, seniors and other professionals								
CO 4	Acquire the knowledge of the basics in Managerial & Management skills, & use of information technology in professional Practice	3	2	3	3	3	3	2	3

	Basics of Photography	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	To understand the basic skills of Photography	-	-	1	3	2	1	1	1
CO 2	To use a variety of brainstorming techniques to generate novel ideas in photography	-	-	1	3	2	1	2	1
CO 3	Sufficient photographical mastery of technical and formal challenges pertinent to a body of original visual work.	-	-	1	3	2	-	-	-

	JAVA in PR	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO 1	Understand why Java is useful for the design of desktop and web applications.	1	-	-	-	1	1	1	
CO 2	Knowledge on how to implement object-oriented designs with Java.	-	-	-	1	-	2	-	
CO 3	To identify Java language components and how they work together in applications.	2	-	-	-	1	3	3	
	To design and program stand-alone Java applications.	2	-	-	3	-	2	-	

DISTRIBUTION OF CREDIT AND COURSE HOURS
SEMESTER 1

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	Human Anatomy - I	120	60	60	4	4	4	2	6
	Human Physiology- I	120	60	60	4	4	4	2	6
	General Psychology & Sociology	60	60	0	4	0	4	0	4
(Ability Enhancement – Compulsory)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
	English & Computer application	30	30	0	2	0	2	0	2
	Basics of nursing and first aid & bed side manners, Patient hospitality	30	30	0	2	0	2	0	2

Elective course									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
SE	Introduction to programming in Java	45	15	30	1	2	1	1	2
SE	Basic Photography	45	15	30	1	2	1	1	
Clinical /Others									
	Total hours / credit	**405**							**22**

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DISTRIBUTION OF CREDIT AND COURSE HOURS
SEMESTER 2

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	Human Anatomy - 2	120	60	60	4	4	4	2	6
	Human Physiology- 2	120	60	60	4	4	4	2	6
	Ethics in physiotherapy and management	60	60	0	4	0	4	0	4
(Ability Enhancement & Disciplinary elective– Compulsory)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
DE	Biochemistry	30	30	0	2	0	2	0	2
AE	Environmental science	30	30	0	2	0	2	0	2

Elective course									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
AE	Infection prevention and control	30	30	0	2	0	2	0	2
AE	Soft skill training	30	30	0	2	0	2	o	
Clinical /Others									
	Total hours / credit	**390**							**22**

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No.12, Vembuliamman Koil Street, West K.K.Nagar, Chennai-78.

DISTRIBUTION OF CREDIT AND COURSE HOURS
SEMESTER 3

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	Exercise Therapy with soft tissue manipulation I	150	60	90	4	6	4	3	7
	Biomechanics I	60	60	0	4	0	4	0	4
	Microbiology Pathology/Pharmacology	60	60	0	4	0	4	0	4

Elective course									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
SE	Disaster risk management	45	15	30	1	2	1	1	2
SE	Culinary skills for ideal Nutrition	45	15	30	1	2	1	1	
Clinical /Others									
	Total hours / credit	**315**							**17**

PRINCIPAL
FACULTY OF PHYSIOTHERAPY
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DISTRIBUTION OF CREDIT AND COURSE HOURS
SEMESTER 4

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	Exercise Therapy with soft tissue manipulation 2	150	60	90	4	6	4	3	7
	Biomechanics 2	60	60	0	4	0	4	0	4
	Internal Medicine (GM, GS Pediatrics, Geriatrics)	60	60	0	4	0	4	0	4

Elective course									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
GE	Nutrition in health and diseases	30	30	0	2	0	2	0	2
GE	Introduction to visual communication	30	30	0	2	0	2	0	
Clinical /Others									
	Total hours / credit	**300**							**17**

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DISTRIBUTION OF CREDIT AND COURSE HOURS
SEMESTER 5

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	Electrotherapy I	150	60	90	4	6	4	3	7
	Electrotherapy II	150	60	90	4	6	4	3	7
	Bio-Statistics And Research Methodology	60	60	0	4	0	4	0	4
(Ability Enhancement – Compulsory)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
AE	Basics Physics	30	30	0	2	0	2	0	2

Elective course									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
GE	Yoga practice	60	30	30	2	2	2	1	3
SE	Basic Life support	60	30	30	2	2	2	1	
Clinical /Others									
	Clinical Training 1	90							2
	Total hours / credit	**540**							**25**

DISTRIBUTION OF CREDIT AND COURSE HOURS

SEMESTER 6

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	Clinical Orthopedics with Traumatology	60	60	0	4	0	4	0	4
	Clinical Neurology	60	60	0	4	0	4	0	4
	Clinical Cardio Respiratory conditions	60	60	0	4	0	4	0	4
	Women's Health (CL & PT)	120	60	60	4	3	4	2	6
	Clinical Training 2	135							3
	Total hours / credit	**435**							**21**

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DISTRIBUTION OF CREDIT AND COURSE HOURS
SEMESTER 7

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	Physical function and diagnosis	180	60	120	4	6	4	4	8
	Rehabilitation medicine	60	60	0	4	0	4	0	4
	Community medicine & Community physiotherapy	60	60	0	4	0	4	0	4

Elective course									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
SE	Introduction to public speaking	45	15	30	1	2	1	1	2
SE	Fabrication and fitting of orthotics and prosthetics	45	15	30	1	2	1	1	
Clinical /Others									
	Clinical Training 3	135							3
	Total hours / credit	**480**							**21**

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DISTRIBUTION OF CREDIT AND COURSE HOURS
SEMESTER 8

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
	Physiotherapy in Orthopedics and traumatology conditions	180	60	120	3	6	4	4	8
	Physiotherapy in Cardio Respiratory conditions	180	60	120	3	6	4	4	8
	Physiotherapy in Neurological Conditions	180	60	120	3	6	4	4	8
Clinical /Others									
	Clinical Training 4	135							3
	Total hours / credit	**675**							**27**

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MEENAKSHI

ACADEMY OF HIGHER EDUCATION & RESEARCH

DEEMED TO BE UNIVERSITY U/S 3 OF UGC ACT, 1956

FACULTY OF PHYSIOTHERAPY

12, Vembuliamman Koil Street, West K.K. Nagar, Chennai – 600 078

CHOICE BASED CREDIT SYSTEM (CBCS)

SYLLABUS FOR

CORE & COMPULSORY ELECTIVE COURSES

BACHELOR OF PHYSIOTHERAPY (BPT)

PRINCIPAL
FACULTY OF PHYSIOTHERAPY
MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH
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DEGREE PROGRAM

2021-22

ANATOMY I (SEMESTER 1)

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Anatomy- I (Core subject)	**120**	**60**	**60**	**04**	**04**	**4**	**2**	**6**

L*- Lecture, P*- Practical

Course Objective:

After 60 hours of theory and 60 hours of Practical the student should be able to

1. Understand the basic terminologies pertaining to human anatomy.
2. Understand the framework of Human body and the role of bones, muscle and ligaments.
3. Analyse the relevance of signs and symptoms and co relate with clinical anatomy.
4. Identify and spot the structures on the go along with topographical learning.
5. Utilize the learnt knowledge in multidisciplinary team work and research.

s.no	Title of Content	Hours of teaching (4 Credits = 60 Hrs.) Theory	Practical's (2 Credits = 60 Hrs.)	SPT*
1.	Introduction a) Define Anatomy and mention its subdivisions b) Name regions, cavities and systems of the body c) Define anatomical positions and common terminologies d) Axes & Planes	2	1	1
2.	Embryology a) Introduction b) Definition c) Stages from fertilization to birth	2	1	-
3.	Cell a) Define a cell b) Mention the shape, size and parts of a cell	2	1	1

	c) Name and give functions of organs. Names of cell bodies d) Define chromosomes, genes e) Mitosis and meiosis main events.			
4.	Tissue a) Classification b) Microscopic structure c) Connective tissue d) Epithelial tissue e) Muscle tissue f) Nervous Note: Give examples for each type of tissue.	2	1	-
5.	Anatomy of Upper limb a) Regional anatomy b) Osteology: Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges. c) Arthrology: Shoulder girdle, shoulder joint, elbow joints, radio ulnar joint, wrist joint and joints of the hand d) Myology: origin, insertion, nerve supply and actions of muscle of corresponding joints of upper limb along with ligaments e) Major Plexus (Brachial Plexus), blood vessels and lymphatic drainage of upper limb. f) Applied anatomy of Upper Limb	26	25	2
6.	Anatomy of Lower limb a) Regional anatomy b) Osteology: Pelvis, femur, tibia, fibula, patella, tarsals, meta tarsals and phalanges. c) Arthrology: Hip Joint, Knee joint, Ankle joint(Mortise), Sub talar joint d) Myology: origin, insertion, nerve supply and actions of muscle of corresponding joints of lower limb along with ligaments.	26	25	2

	e) Major Plexus (Lumbar Plexus, Sacral plexus), blood vessels and lymphatic drainage of lower limb f) Applied anatomy of Lower Limb			
TOTAL HOURS =120 (Theory/Practical/SPT)		**60**	**54**	**6**

SPT : Supervised Practical training

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

Reference

1. BD Chaurasia's Human Anatomy: Vol. 1 ,Vol. 2 by B. D. Chaurasia
2. Gray's Anatomy by Henry Gray, Peter L. Williams
3. Cunningham's Manual of Practical Anatomy: Volume 1 to 3 by G. J. Romanes
4. Textbook of Anatomy with Colour Atlas by Inderbir Singh
5. Principles of Anatomy and Physiology, 14th Edition by Gerard J. Tortora, Bryan H. Derrickson

PHYSIOLOGY I (SEMESTER 1)

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Physiology- I (Core subject)	**120**	**60**	**60**	**04**	**04**	**4**	**2**	**6**

Course Objective:

After 60 hours of theory and 60 hours of Practical the student should be able to

1. Understand the preliminary function of a cell and its components.
2. Understand the importance of maintaining homeostasis during various activities.
3. Obtain through knowledge about the various hormones of the body and circadian rhythm.
4. Gain knowledge about gut and its vital role as biological fuel.
5. Utilize the learnt knowledge in research.

s.no	Title of Content	Hours of teaching (4 Credits = 60 Hrs.) Theory	Practical's (2 Credits = 60 Hrs.)	SPT
1	General Physiology a) Introduction b) Terminologies c) Cell: structure, function and Transport	2	3	2
2	Body fluids a) Classification (list) b) Blood: Components; and their functions; RBC; WBC, Platelets, Blood groups. (Landsteiner's law) Significance of RBC and WBC counts, ESR and other related tests. Clotting mechanisms c) Blood volume and its regulation d) Plasma: Composition, formation, functions and Plasma proteins	8	15	5

	e) Lymph: Components and flow			
3	Integumentary system a) Components b) Skin :Structure; functions; blood flow c) Homeostasis: Methods of regulation	5	-	5
4	Musculo-skeletal system a) Introduction and definition b) Physiology of Skeletal muscles c) Physiology of Smooth muscles d) Physiology of Cardiac muscles e) Applied Physiology of Muscular diseases	20	-	10
5	Digestive System a) Introduction and functions b) Components of digestive system c) Components and Functions of stomach, liver, Gall bladder, Spleen, Intestine d) Applied Physiology of Digestive system	10	-	10
6	Endocrine system: Secretions, function and applied physiology of the following glands a) Pituitary gland b) Thyroid gland c) Parathyroid glands d) Adrenal glands e) Pancreas f) Gonads g) Pineal gland	15	-	10
TOTAL HOURS= 120		**60**	**18**	**42**

SPT : Supervised Practical training

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

Reference

1. Text book of physiology by L. Prakasam Reddy.
2. Guyton and Hall Textbook of Medical Physiology by John E. Hall.

3. Text book of medical physiology by Sembulingam
4. Review of Medical Physiology – Ganong
5. Samson & Wright"s Applied Physiology

COURSE TITLE: GENERAL PSYCHOLOGY AND SOCIOLOGY (SEMESTER 1)

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	General Psychology and sociology (Core subject)	**60**	**60**		**04**		**4**		**4**

Learning Objectives:

At the end of the course,

1. The student understand specific psychological and social factors and effects in physical illness
2. The student will have a holistic approach in their dealings with patients during admission, rehabilitation and discharge
3. The students will be able to recognize and help with the psychological and social factors.
4. The subject will help them to understand the reason of non – compliance among patients and improve compliance behaviour
5. The students will incorporate the factors like disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical – surgical patient / condition.

s.no	TITLE OF CONTENT	Hours of teaching (4 Credits = 60 Hrs) Theory
1.	**DEFINITION OF PSYCHOLOGY** Definition of psychology, basic information in relation to following schools methods And branches	

	Schools: Structuralism, functionalism, behaviourism, and psychoanalysis, gestalt psych. **Methods:** Introspection, observation, inventory and experimental method. **Branches:** General, child, social, abnormal, industrial, clinical, counselling	2
2.	**HEREDITY AND ENVIROMENT** Twins, relative importance of heredity and environment their role in relation to physical characteristics, intelligence and personality, nature – nature controversy.	2
3.	**DEVELOPMENT AND GROWTH BEHAVIOUR** Infancy, childhood, adolescence, adulthood, middle age, old age	2
4.	**INTELLIGENCE** Definitions-IQ, mental age, list of various intelligence tests- WAIS, WISC, Bhatia performance test, Raven progressive matrices test	2
5.	**MOTIVATION** Definition – motive, drive, incentive, reinforcement, basic information about primary Needs: hunger, thirst, sleep, avoidance of pain, attitude to sex	2
6.	**EMOTIONS** Definition, differentiate from feelings, physiological changes of emotion. Rule of RAS, hypothalamus, cerebral cortex, SNS, adrenal gland, heredity and emotion, Nature and control of anger, fear, and anxiety	2
7.	**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 BAL, CPI, MMPI. **Projective tests**-Rorschach, TAT, Sentence completion test.	2
8.	**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.	2
9.	**THINKING** Definitions, concepts, creativity, steps in creative thinking. List the traits of creative People, delusions.	2
10.	**FRUSTRATION** Definition, sources, solution, conflict; approach – approach, avoidance – avoidance, Approach – avoidance.	2
11.	**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, colour, 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	2
12	**LEADERSHIP** Qualities of leadership: physical factors, intelligence, sociability, will and dominance.	2
13	**HEALTH PSYCHOLOGY** **PSYCHOLOGICAL REACTIONS OF PATIENT** **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.	1
14	**REACTION TO LOSS** Reaction to loss, death and bereavement, shock and disbelief, development of awareness, stage of acceptance **STRESS** Physiological and psychological changes, relation to health and	1

	sickness: psychosomatics, professional stress, burnout	
15	**COMMUNICATION** **Types** – Verbal, non- verbal, elements in communication, developing effective communication, specific communication technique. **Counselling** – Definition, aim, differentiate from guidance, principles in counselling. **COMPLIANCE** Nature, factors, contributing to no compliance	1
16	**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.	1
17	**GERIATRIC PSYCHOLOGY** Specific psychological reactions and needs of geriatric patient **PAEDIATRIC PSYCHOLOGY** Specific psychological reactions and needs of paediatric patients	1
	TOTAL TEACHING HOURS	**30**

s.no	TITLE OF CONTENT	Hours of teaching (4 Credits = 60 Hrs) Theory
1.	**INTRODUCTION** Definition of sociology, sociology as a science of society, uses of study of sociology, application of knowledge of sociology in physiotherapy.	2
2.	**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.	3
3.	**SOCIALIZATION** Meaning of socialization, influence of social factors on	

	personality, socialization in hospital, socialization in rehabilitation of patient.	3
4.	**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.	2
5.	**FAMILY** Concepts of community, role of rural and urban communities in public health, role of Community in determining beliefs, practices and home remedies in treatment.	3
6.	**CULTURE** Components of culture, impact of culture on human behaviour, cultural meaning of Sickness, response of sickness & choice of treatment, culture induced symptoms and disease, sub-culture of medical workers.	3
7.	**CASTE SYSTEM** Features of the modern caste system and its trends.	2
8.	**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.	3
9.	**SOCIAL CONTROL** Meaning of social control, role of norms, folkways, customs, morals, religion law and other means of social control in the regulation of human behaviour, social deviance and Disease	2
10	**SOCIAL PROBLEMS OF THE DISABLED** Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems, Population explosion. Poverty and unemployment, Beggary. Juvenile delinquency, Prostitution. Alcoholism, Problems of women in employment.	5
11	**SOCIAL SECURITY** Social security and social legislation in relation to the disabled.	2
	TOTAL TEACHING HOURS	**30**

REFERENCE

1. Psychology for Physiotherapists by Bid Dibyendunarayan, A Thangamani

Ramalingam
2. Introduction to Health Psychology Val Morrison, Paul Bennett
3. Textbook of Sociology for Physiotherapy Students by KP Neeraja
4. Sociology & Health for Physiotherapists by Niraj Pandit
5. Parter & Alder' Psychology & Sociology Applied to Medicine. New York: W.B. Sunders.

Course Title: BASIC NURSING AND FIRST AID, BED SIDE MANNERS, PATIENT HOSPITALITY

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Basic nursing and first aid, bed side manners, patient hospitality (Ability enhancement)	**30**	**30**		**02**		**2**		**2**

COURSE DESCRIPTION

The Course Will Enable Students To Understand The Basic Nursing And First Aid, patient hospitality & bed side manners And Its Application In Relation With Physiotherapy.

COURSE OBJECTIVES

The objective of this course is that after 30 hours of lectures and demonstrations the student will be able to understand the role of physiotherapy in emergency medicine.

s no	Title of content	Hours of teaching/Learning
1	*First Aid Basics* 1. Rescuer Duties	6 hrs

	2. Victim and Rescuer Safety 3. Phoning for Help 4. Finding the Problem 5. after the emergency	
2	*: Medical Emergencies* 1. Breathing Problems 2. Choking in an Adult 3. Allergic Reactions 4. Heart Attack 5. Fainting 6. Diabetes and Low Blood Sugar 7. Stroke 8. Shock	6 hrs
3.	*Injury Emergencies* 1. Bleeding You Can See 2. Wounds 3. Bleeding You Can't See 4. Head, Neck, and Spine Injuries 5. Broken Bones and Sprains . Burns and Electrical Injuries	3 hrs
4.	*: Environmental Emergencies* 1. Bites and Stings 2. Heat-Related Emergencies 3. Cold-Related Emergencies	3 hrs

	Poison Emergencies	
5.	*CPR and AED* 1. CPR and AED for Adults 2. CPR and AED for Children 3. How to Help a Choking Child 4. CPR for Infants 5. How to Help a Choking Infant	5 hrs
6.	Bed side manners 1.By Nursing Staff 2. By Auxillary personnel	4 hrs
7.	Patient Hospitality 1.Ethical principles governing critical care 2.Policies & Procedures	3 hrs

REFERENCE

1. Text book of Basic Nursing by Caroline bunker.
2. Text book of Tidy's physiotherapy by B.Port
3. Principles of hospital Administration by B.M.Sakharkar.

Course Title: ENGLISH AND COMPUTER APPLICATION

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	English and computer application (Ability enhancement)	**30**	**30**		**02**		**2**		**2**

Learning Objective

This course is designed to help the student acquire a good command and comprehension of the English language through individual, papers and conferences

COURSE CONTENT-ENGLISH				
S .no.	Title of the Content	Hours of teaching/Learning		
		Theory	Practical	SPT
1	**UNIT 1**	**07**	-	-
	Introduction: Study Techniques Organization of effective note taking and logical processes of analysis and synthesis The use of the dictionary Enlargement of vocabulary Effective diction	02	-	-
	Grammar And Vocabulary • Reading Comprehension • Verb Forms • Right Words (Synonyms, Antonyms, Homonyms and One-Word Substitutes) • Detection of Errors • Reported Speech • Transformation • Tenses • Punctuation • Phrases and Idioms	02	-	-
	Applied Grammar: Correct usage	02	-	-

	The structure of sentences The structure of paragraphs Enlargements of Vocabulary **Written Composition**: Precise writing and summarizing Writing of bibliography Enlargement of Vocabulary Essay	01	-	-
2	**Unit – II**	08	-	-
	Reading and comprehension Review of selected materials and express oneself in one's words. Enlargement of Vocabulary. . The Study of Various Forms of Composition	02		
	Paragraph, Essay, Letter, Summary, Practice, writing **Functional English** • Introduction to Functional English • English for Personal and Social Use • English for Career and Professional Use **Verbal Communication:** Introduction to Communicative Grammar and Usage Discussions and Summarization, Debates, Oral reports, use in teaching Reading Literature for English Language	03 03	- -	- -
	Total Hours (Theory)	**15**	-	-

Reference

1. English Grammar Collins, Birmingham University, International Language Data Base, Rupa & Co. 1993
2. Wren and Martin - Grammar and Composition, 1989, Chanda.& Co, Delhi
3. Letters for all Occasions A S Myers. Pub - Harper Perennial
4. Spoken English V Shasikumar and P V Dhanija_ Pub. By: Tata Mcgraw Hill, NewDelhi

COMPUTER APPLICATION

Course Description:

1. To study the various components of a personal computer.
2. To have working Knowledge of hardware and software.
3. To practice the operational skill of common computer application including works processing & spread sheet software .
4. To have a basic knowledge of utility of multi- media.
5. To learn skills of web surfing-For literature, research relevance to the field of medicine

COURSE CONTENT-COMPUTER APPLICATION				
S.no.	Title of the Content	Hours of teaching/Learning		
		Theory	Practical	SPT
1	**UNIT 1**	**07**	-	-
	Introduction to computer Characteristics of computer, Classification of Computers, IT Applications. Basic computer organisation, operating system, editor, compiler, interpreter, loader, linker, program development **MS-Office** – Word, Power Point, Excel, Access, Publisher, outlook Corel Draw Photoshop Web Designing. **Internet and its application-** • Packet switched networks, what is Internet? Types of Information Available on internet Internet Address, Organizational Domains • Internet Protocol Address • Getting Connected to Internet • Types of Internet Access, Direct Connections, Internet Services, ISDN (Integrated Services Digital Network), NICNCT, ArchieWide Area Information Server (WAIS), World Wide Web (WWW)	03 02 02	- -	- -

	Tele Conferencing, Video Conferencing.			
2	**Unit – II**	08	-	-
	Getting started with Adobe Flash • Using flash tools. • Programming • Introduction to modular approach of problem solving, concepts of procedure and functions for effective programming	02	-	-
	More on word 2010 • Applying drop cap • Inserting hyperlinks and watermark • Setting line, paragraph spacing, page margin • Changing page orientation • Applying column formatting **More on Power point 2010** • Inserting audio file , Video • Adding Animation, Transitions **More on Excel 2010** • Formatting worksheet, Numbers • Autofill, Formula in Excel • Entering a formula, Copying a formula • Errors in formula and functions • Printing in Excel **Computer Virus** • Computer virus versus Biological virus • Computer virus classification– Boot sector virus, Companion virus, E-mail virus, Logic Bomb, Macro virus, Cross-site scripting virus, Worm, Trojan Horse. • Effects of computer virus, the vulnerability of operating systems to virus, protection from virus and use of popular antivirus software	02 01 02 01		- -
	Total Hours (Theory)	**15**		

Reference

1. Learning to Use Your Computer by Angela Besant
2. Teach Yourself Basic Computer Skills by Moira Stephen

COURSE TITLE: ANATOMY II (SEMESTER 2)

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Anatomy- II (Core subject)	**120**	**60**	**60**	**04**	**04**	**4**	**2**	**6**

Course Objective:

After 60 hours of theory and 60 hours of Practical the student should be able to

1. Understand the basic terminologies pertaining to human anatomy.
2. Understand the framework of Human body and the role of bones, muscle and ligaments.
3. Analyse the relevance of signs and symptoms and co relate with clinical anatomy.
4. Identify and spot the structures on the go along with topographical learning.
5. Utilize the learnt knowledge in multidisciplinary team work and research.

s.no	Title of Content	Hours of teaching (4 Credits = 60 Hrs) Theory	Practical (2 Credits = 60 Hrs)	SPT
1	Abdomen Define Anatomy and mention its subdivisions Name regions and cavities Define anatomical positions and common terminologies Diaphragm(origin, insertion ,action, openings, applied anatomy)	2	1	1
2	Cranial nerves d) Introduction e) Definition f) Types g) Function h) Assessment	2	1	-
3	Anatomy of Brain f) Structure	4	1	1

	g) Function h) Lobes i) Blood supply j) Major nuclei k) Applied anatomy of various lobes of brain.			
4	Anatomy of spinal cord g) Structure h) Functions i) Coverings j) Cerebrospinal fluid(origin to absorption) k) Ascending and descending pathways l) Reflexes m) Applied anatomy of spinal cord	12	1	-
5	Head and neck g) Regional anatomy h) Osteology: Skull (Sutures, Foramen, parts),Mandible. i) Arthrology: Tempero mandibular joint j) Myology: origin, insertion, nerve supply and actions of superficial and deep muscle of neck, muscles of face and muscles of mastication and along with ligaments k) Major Plexus (cervical plexus), blood vessels and lymphatic drainage. l) Applied anatomy of Head and neck	20	25	2
6.	Anatomy of Thorax and vertebral column g) Regional anatomy h) Osteology: Sternum, Ribs, cervical, thoracic, lumbar, sacrum, coccyx. i) Arthrology: Sternoclavicular Joint, Sternocostal joint, costochondral joint, Costovertebral joint, intervertebal joint. j) Myology: origin, insertion, nerve supply and actions of muscle of corresponding joints of thorax and vertebral column along with ligaments. k) Major blood vessels and lymphatic drainage of thorax and vertebral column l) Applied anatomy of Thorax and vertebral column	20	25	2
TOTAL TEACHING HOURS= 120		**60**	**54**	**6**

PRINCIPAL
FACULTY OF PHYSIOTHERAPY
MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)
No.12, Vembuliamman Koil Street, West K.K.Nagar, Chennai-78.

SPT : Supervised Practical training

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

Reference

1. BD Chaurasia's Human Anatomy: Vol. 1 ,Vol. 2 by B. D. Chaurasia
2. Gray's Anatomy by Henry Gray, Peter L. Williams
3. Cunningham's Manual of Practical Anatomy: Volume 1 to 3 by G. J. Romanes
4. Textbook of Anatomy with Colour Atlas by Inderbir Singh
5. Principles of Anatomy and Physiology, 14th Edition by Gerard J. Tortora, Bryan H. Derrickson

PHYSIOLOGY II

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Physiology- II (Core subject)	**120**	**60**	**60**	**04**	**04**	**4**	**2**	**6**

Course Objective:

After 60 hours of theory and 60 hours of Practical the student should be able to

1. Understand the preliminary function of special senses.
2. Understand the importance of maintaining homeostasis during various activities.
3. Obtain through knowledge about the various regulatory mechanism of body.
4. Gain knowledge about convection and conduction systems and its vital role.
5. Utilize the learnt knowledge in research.

s.no	Title of Content	Hours of teaching (4 Credits = 60 Hrs) Theory	Practical's (2 Credits = 60 Hrs)	SPT
1	Special senses a) olfaction (smell) b) Gustation (taste) c) Equilibrium (balance and body position) d) Vision e) Hearing	10	3	2
2.	Nervous System a) Structure of neurons. b) Properties of neurons ;(excitation and conduction). c) Synapse and synaptic transmission d) Reflexes and properties of reflexes. e) Sensory endings	15	15	5

	f) Spinal cord :ascending and descending tracts g) cerebral cortex h) cerebellum i) Thalamus j) Basal ganglia k) Control of posture and control of voluntary motor activity l) Autonomic nervous system. m) Cerebro spinal fluid: origin, composition, circulation, functions, clinical significance, applied physiology			
3.	Circulatory system a) Structure and normal blood flow of the heart b) Cardiac cycle. c) Heart sounds: Normal and abnormal d) Cardiac output. e) Factors regulating the action of the heart. f) Blood pressure: maintenance and regulation. g) Cerebral circulation h) Renal circulation i) Pulmonary circulation. j) Effects of exercise. k) Effects of postural changes including orthostatic hypotension l) Applied Physiology of circulatory system	15	15	
4.	Respiratory System a) Mechanics of breathing b) Lung volumes and capacities c) Transport of respiratory gases d) Nervous and chemical regulation of respiration. e) Hypoxia- types and causes. f) Effects of exercise on respiration.	15	10	
5.	Excretory system a) Introduction and components b) Structure of the nephron. c) Formation of urine. d) Micturation e) Bladder and bowel control including types of incontinences	3	-	5
6.	Reproductive System a) Male reproductive system b) Female reproductive system c) Outline of pregnancy d) Functions of placenta e) Parturition	2	-	5

	f) Lactation g) Contraceptive measures. h) Factors that affect fetal growth			
TOTAL TEACHING HOURS= 120		**60**	**60**	

SPT : Supervised Practical training

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Reference

1. Text book of physiology by L.prakasam Reddy.
2. Guyton and Hall Textbook of Medical Physiology by John E. Hall.
3. Text book of medical physiology by Sembulingam
4. Review of Medical Physiology – Ganong
5. Samson & Wright"s Applied Physiology

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Course Title: **ETHICS IN PHYSIOTHERAPY AND MANAGEMENT**

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Ethics in Physiotherapy and management (Core subject)	**60**	**60**		**04**		**4**		**4**

OBJECTIVES:

At the end of the course, the student will be compliant in following domains:

The student will

1. Be able to understand the moral values and meaning of ethics
2. Be able to learn and apply ethical code of conduct in fields of clinical practice, learning, teaching, research and physiotherapist-patient relationship
3. Acquire bedside manners and communication skills in relation with patients, peers, seniors and other professionals
4. Will acquire the knowledge of the basics in Managerial & Management skills, & use of information technology in professional Practice

COURSE CONTENT				
s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
1	Introduction to the history of Physiotherapy	**1**		
2	Orientation to the curriculum, clinical areas and geographical location.	**2**		

3	Concept of morality and ethics	2		
4	Concept of professionalism and Professional dress code i. Ethical code of conduct ii. Communication skills a. Physiotherapist –Patient Relationship b. INTERVIEWING -Types of interview, Skills of interviewing	3		
5	Collecting data on psychosocial factors in Medicine, Surgery, Reproductive Health, Paediatrics	3		
6	Inter professional communication	2		
7	Ethics in clinical practice	2		

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
8	Roles of Physiotherapist as patient manager, Consultant, Critical inquirer, Educator	3		
9	Administrator Laws and regulations	3		
10	Professional development, competence and expertise	3		
11	Professional bodies	3		
12	Ethics in Research	3		
13	Ethics in Teaching	3		
14	Role of W.C.P.T. & Council	3		
15	W.C.P.T. ethics (from their website)	2		
16	Rules & Regulation of Indian Association of Physiotherapists	3		
17	Management studies related to –local health care organization, Management & structure, planning delivery with quality assurance & funding of service delivery information technology, career development in Physiotherapy.	3		

18	Administration-principles-based on the Goal & functions -at large hospital set up / domiciliary services/ private clinic /academics	3		
19	Methods of maintaining records	2		
20	Budget-planning	3		
21	Performance analysis--physical structure / reporting system [man power / status /functions / quantity & quality of services/turn over- cost benefit revenue contribution	3		
22	Setting up Therapeutic gymnasium, Fitness clinics, Cardiac and Pulmonary Rehab centres etc.	3		
23	Time management	2		
	Total Hours (Theory /Practical / SPT)	**60**		

REFERENCE

1. Administration for Physiotherapists- Pai
2. Principles of Hospital Administration- Sakharkar

COURSE TITLE: BIOCHEMISTRY

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Biochemistry (Disciplinary elective)	**30**	**30**		**02**		**2**		**2**

Course Objective:

After 30 hours of theory lecture the student should be able to

1. Understand the basic metabolic processes that occur in a cell and human body.
2. Understand the intra and extra cellular matrix and value of homeostasis.

3. Read clinical reports and co relate with the clinical scenario.
4. Understand the importance of vital nutrients and its role in normal human functioning.
5. Utilize the learnt knowledge in applied research.

s.no	**Title of Content**	Hours of teaching (2 Credits = 30 Hrs) Theory
1.	Introduction to biochemistry a) Components of cell b) Biochemical properties of human body	2
2.	Acids and bases a) Introduction and Definition b) Buffers and pH c) Ionization of water d) Water and Electrolyte balance and imbalance e) Acid base balance	3
3.	Chemistry of Carbohydrates a) General nature b) Classification c) Monosaccharide's d) Disaccharides e) Polysaccharides f) Digestion and Absorption g) Fate of Glucose h) Metabolic pathways (Glycobiology)	5
4.	Chemistry of Lipids a) General nature b) Classification c) Phospholipids d) Cholesterol e) Lipoproteins i) Digestion and Absorption j) Fate of Lipids f) Metabolic pathways g) Liver function test	6
5.	Chemistry of Proteins h) General nature i) Classification k) Digestion and Absorption l) Fate of Amino acids j) Metabolic pathways (Inborn Errors) k) Renal function test	6
6.	Chemistry of Nucleoproteins a) Purines and Pyrimidine bases b) Nucleotides and Nucleosides c) Nucleic acids – DNA and RNA d) Clinical significance and conditions	3
7.	Fundamentals of Nutrition:	3

	a) BMR, SDA, Caloric value of foods, Caloric requirements, Carbohydrate in diet, Fat in diet, Protein in nutrition. b) Vitamins c) Minerals d) Nitrogen balance e) Malnutrition and conditions	
8.	Enzymes General nature Nomenclature Classification Significance Biological oxidation Oxidative phosphorylation	2
TOTAL TEACHING HOURS		**30**

Reference

1. Textbook of Biochemistry for Physiotherapy Students - New Revised 6th edition 2019-2020. by Prasad R Manjeshwar
2. Textbook of Biochemistry for Medical Students by Damodaran M. Vasudevan and S. Sreekumari
3. Biochemistry by U Satyanarayana

COURSE TITLE: ENVIRONMENTAL STUDIES

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Environmental studies (Ability enhancement)	**30**	**30**		**02**		**2**		**2**

Course Objective:

After 30 hours of theory lecture the student should be able to

1. Increase awareness of environmental issues.
2. Provide a basic understanding of the environment and its related problems.
3. Develop an environment-conscious attitude.
4. Encourage public participation in environmental protection and improvement.
5. Understand proper disposal and novel methods of recycling.

s.no	**Title of Content**	Hours of teaching (2 Credits = 30 Hrs) Theory
1	Multidisciplinary nature of environmental studies 1. Definition, scope and importance 2. Need for public awareness. 3. Importance for Physiotherapist	1
2	Natural Resources ,Renewable and non-renewable resources : Natural resources and associated problems. a) Forest resources b) Water resources. c) Mineral resources d) Food resources e) Energy resources f) Land resources g) Role of an individual in conservation of natural resources. h) Equitable use of resources for sustainable lifestyles.	3
3	Ecosystems a) Concept of an ecosystem. b) Structure and function of an ecosystem. c) Producers, consumers and decomposers. d) Energy flow in the ecosystem. e) Ecological succession. f) Food chains, food webs and ecological pyramids. g) Forest ecosystem h) Grassland ecosystem i) Desert ecosystem j) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	6
4	Biodiversity and its conservation a) Introduction – Definition: genetic, species and ecosystem diversity. b) Bio-geographical classification of India c) Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values d) Biodiversity at global, National and local levels. e) India as a mega-diversity nation, Hot-sports of biodiversity. f) Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. g) Endangered and endemic species of India	5

	h) Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity	
5	Environmental Pollution: Definition Cause, effects and control measures of :- a) Air pollution b) Water pollution c) Soil pollution d) Marine pollution e) Noise pollution f) Thermal pollution g) Nuclear hazards h) Solid waste Management: Causes, effects and control measures of urban and industrial wastes. i) Role of an individual in prevention of pollution. j) Disaster management : floods, earthquake, cyclone and landslides.	6
6	Social Issues and the Environment a) From Unsustainable to Sustainable development b) Urban problems related to energy c) Water conservation, rain water harvesting, watershed management d) Resettlement and rehabilitation of people; its problems and concerns. e) Environmental ethics: Issues and possible solutions. f) Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. g) Wasteland reclamation. h) Consumerism and waste products. i) Environment Protection Act. j) Air (Prevention and Control of Pollution) Act. k) Water (Prevention and control of Pollution) Act l) Wildlife Protection Act m) Forest Conservation Act n) Issues involved in enforcement of environmental legislation. o) Public awareness	6
7	Human Population and the Environment a) Population growth, variation among nations. b) Population explosion – Family Welfare Programme. c) Environment and human health. d) Human Rights. e) Value Education. f) HIV/AIDS. g) Women and Child Welfare. h) Role of Information Technology in Environment and human health.	3
TOTAL TEACHING HOURS		**30**

Reference

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha

COURSE TITLE : EXERCISE THERAPY WITH SOFT TISSUE MANIPULATION-I

(SEMESTER 3)

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	

	Exercise therapy with soft tissue manipulation-I (Core theory)	**150**	**60**	**90**	**04**	**06**	**4**	**3**	**7**

Learning Objectives

At the end of the course the student will be able to

- Define the various terminologies used in mechanics
- Demonstrate different starting and derived positions used in therapeutics.
- Understand the mechanism of normal and abnormal pelvic tilts.
- Demonstrate passive movements in terms of the Anatomical planes.
- Demonstrate various therapeutic exercises on self & acquire the application skill on models.
- Acquire the skill to assess, re-educate and strengthen weak muscles on models.
- Acquire the skill of application of various massage manipulations and describe the Physiological effects, therapeutic use, merits /demerits of the same.

COURSE CONTENT			
Title of Content	Theory	Practical	SPT
Unit-I			
Introduction to Exercise Therapy The aims of Exercise Therapy, The techniques of Exercise Therapy, Approach to patient's problems, Assessment of patient's condition – Measurements of Vital parameters, Starting Positions – Fundamental positions & derived Positions, Planning of Treatment	3	-	-
Mechanics Force: Composition of force, Parallelogram of forces. Equilibrium: Stable, unstable, neutral. Gravity: Centre of gravity, Line of gravity. Levers: 1st order, 2nd order, 3rd order, their examples in the human body and their practical applications in physiotherapy, forces applied to the body levers. Pulleys: Fixed, Movable. Springs: Series, parallel Tension Elasticity: Hook's law Axis: Sagital, Frontal, Transverse, Vertical. Planes: Sagittal, Frontal, Horizontal. Definitions of: Speed, Velocity, Work, Energy, Power, acceleration, Momentum, Friction and inertia.	3	-	-
Mechanics Force: Composition of force, Parallelogram of forces. Equilibrium: Stable, unstable, neutral.	3	-	-

Gravity: Centre of gravity, Line of gravity. Levers: 1st order, 2nd order, 3rd order, their examples in the human body and their practical applications in physiotherapy, forces applied to the body levers. Pulleys: Fixed, Movable. Springs: Series, parallel Tension Elasticity: Hook's law Axis: Sagittal, Frontal, Transverse, Vertical. Planes: Sagittal, Frontal, Horizontal. Definitions of: Speed, Velocity, Work, Energy, Power, acceleration, Momentum, Friction and inertia.			
Muscle action Muscle work: Isotonic (concentric, eccentric), isometric(static). Group action: Agonists (prime movers), Antagonists, Synergists, Fixators. Angle of muscle pull, Mechanical efficiency of the muscles.	3	-	-
Pelvic tilt Normal pelvic tilt; Alteration from normal, anterior tilt (forward), posterior (backward), lateral tilt. Muscles responsible for alteration and pelvis rotation. Identification of normal pelvic tilt, pelvic rotation and altered tilt and their corrective measures	2	1	1
Unit-II			
Starting positions Definition, Purpose, Positions-Standing, Sitting, Lying, Kneeling, Hanging	3	2	1
Derived positions 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	4	2	2
Unit-III			
Movements Anatomic movements: Flexion, Extension, Abduction, Inversion, Eversion, Supination, Pronation, Internal rotation, External rotation, Gross flexion, Gross extension, Trunk side flexion. Surface anatomy of the individual joint. Rhythm of movement Timing of movement Duration of movement Classification	1	–	

Passive movements Passive movement: Relaxed passive movement, mobilization (forced P.M. manipulation, serial manipulation), principles and indications of relaxed passive movements along with its effects and uses.	4	6	4
Active movements List the indications and contra- indication of the following and demonstrate the technique for each Active movement; voluntary (free, active, assisted-resisted, resisted), involuntary (associated reflex, Peristaltic/Visceral, cardiac).	6	5	5
Unit-IV			
Stretching Demonstrate passive and active stretching of following muscles/ muscle groups and describe the indications, contra-indications, physiological effects, advantages and disadvantages of each. • Upper limb: pectoralis major, biceps brachi, triceps brachi, long flexors of the fingers. • Lower limb: rectus femoris , Iliotibial band (tensor fascia latae), gastrocnemius, soleus, hamstring, hip adductor, iliopsoas. • Neck: Sternocleidomastoid. • Upper trunk,lower trunk	3	5	5
Unit-V			
Progressive resisted exercises- Techniques of the following types of PRE – FRACTIONAL SYSTEM,MACQUEENS SET SYSTEM,MACQUEENS POWER SYSTEM. • Demonstrate delormes boot, dumbbell, sand bag, pulley, power board.	3	2	2
Muscle grading- Describe the types of muscle grading, techniques of muscle grading-easy test, hard test, functional test. • demonstrate the skill to grade upper and lower limb, neck and trunk muscles	3	5	5
Re-education of muscles • Describe the following- the term re education,technique, spatial summation. temporal summation. • Demonstrate the various re education techniques and facilitating methods on various muscle groups. • Demonstrate the progressive exercises in strengthening using various applications from grade 1 to grade 5.	8	6	4

Unit-VI			
Soft tissue Manipulation- History of massage Mechanical points to be considered Physiological effects of massage on various systems of the body Define and describe the various manipulation techniques used in massage- stroking manipulation, pressure manipulation, shaking manipulation.	3	2	2
Upper limb Massage- Define and describe the techniques effects and uses and contraindications	3	3	3
Lower limb massage- Define and describe the techniques effects and uses and contraindications	3	3	3
Face massage- Define and describe the techniques effects and uses and contraindications	2	2	2
Back massage- Define and describe the techniques effects and uses and contraindications	3	3	3
Total (Hours)= 150 Hrs	**60 hrs**	**48 hrs**	**42 hrs**

Supervised Practical training (SPT) (include practice session, assignment, journal presentation, seminar presentation etc)

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Reference

1. Principles of Exercise therapy by Dena Gardiner.
2. Therapeutic exercise foundation and techniques by Carolyn Kisner.
3. Practical exercise therapy by Margarat Hollis.
4. Text book of therapeutic exercise by S. Lakshmi Narayan.
5. Therapeutic massage by sinha
6. Hydrotherapy - Duffield
7. Massage for Therapists: A Guide to Soft Tissue Therapy- Margaret Hollis
8. Progressive resisted exercises – by Margaret Hollis
9. Muscle testing- Kendall

Course title: BIO- MECHANICS AND APPLIED ANATOMY &KINESIOLOGY-1 (SEMESTER 3)

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Bio- mechanics and applied anatomy &kinesiology-1 (Core theory)	**60**	**60**		**04**		**4**		**4**

Course Objectives

At the end of the course, the candidate will

1. To acquire the knowledge of axis and planes, to review the anatomy and each movement occurring at each joint. To acquire the knowledge of forces acting at various joints and to acquire the knowledge of muscle and joint work in activities of daily living.

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	Unit I	**15**		
	1.Biomechanical Applications • Describe types of motion, planes of motion, direction of motion and quantity of motion. • Define forces, force vectors, components of forces. • Describe gravity, segmental centre of gravity, centre of gravity, line of gravity of the human body, stability and centre of gravity, relocation of gravity. • Describe reaction forces, Newton's law of reaction. • Describe equilibrium – laws of inertia and establishing equilibrium of an object. • Describe objects in motion: law of acceleration joint distraction in a linear force system and force of friction. • Describe concurrent force systems: composition of forces, muscle action lines, total muscle force vector, divergent muscle pulls, and anatomic pulleys. • Describe parallel force systems: first class levers, second class levers, third class levers, torque, and mechanical advantage. • Define moment arm: Moment arm of a muscle force. Moment arm of gravity and			

	anatomic pulleys. • Describe equilibrium of a lever Describe the following: • Three types of motion • The plane in which a given joint motion occurs, and the axis around which the motion occurs. • The location of the centre of gravity of a solid object, the location of the centre of gravity of the human body. • The action line of single muscle. • The name, point of application direction, magnitude of any inters force, given its reaction. • A linear force system, a concurrent force system, a parallel force system. • The relationship between torque, moment arm and rotatory force component. The methods of determining torque for the same given set of forces. • How anatomic pulleys may change action line, moment arm, and torque passing through them. • In general terms, the point in the joint range of motion at which muscle acting over the joint is biomechanical most efficient. • How external forces can be manipulated to maximize torque. Friction, its relationship to contacting surface and to the applied forces. Determine the following: • The identity (name) of diagrammed forces on an object. • The new centre of gravity of an object when segments are rearranged, give the original centre of gravity. • The resultant vector in a linear system, a concurrent off system, and a parallel force system. • If a given object is in linear and rotational equilibrium. • The magnitude and direction of acceleration of an object not in equilibrium. • Which forces is joint distraction force and which are joint compression forces, what are the equilibrium for force for each?			

	• The magnitude and direction of a friction in a given problem. The class of term in a given position. Compare the following: • Mechanical advantage in a second and third class lever. Work done by a muscle in a second and third class lever. • Stability of an object in two given situations in which location of the centre of gravity and the base of support of the object. Draw the following: • The action line of muscle. • The rotary force component, the translatory force component, and the moment arm for a given force on a lever. **UNIT 2** **Joint Structure And Function** • Describe the basic principles of joint design and human joint. • Describe the tissue present in human joints; including dense fibrous tissue, bone, cartilage and connective tissue. • Classify joints – synarthrosis, amphiarthrosis, diarthrosis, sub classification of synovial joints. • Describe joint function, kinematic chains, range of motion. Describe the general effects of injury and disease. Recall the following: The elementary principles of joint design. The three main classifications of joints. • The five features common to al diarthodial joints. • Types of materials used in human joint construction. Properties of connective tissue.	**15**		

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	Identify the following: • The axis of motion for any given motion at a specific joint (knee, hip, metacarpophalangeal). • The plane of motion for any given motion at a			

	specific joint, shoulder, interphalangeal, wrist. • The degree of freedom at any given joint. • The distinguishing features of diarthodial joint. • The structures that contribute to joint stability. Compare the following: • A synarthrosis with an amphiarthrosis on the basis of methods, materials and function. • A synarthrosis with a diarthrosis on the basis of methods, materials and function. • Closed kinematic chain with an open kinematic chain. • Dense fibrous tissue with bone. • Hyaline cartilage with fibro cartilage.			
	3.Muscle Structure and Function Elements of Muscle Structure Composition of a Muscle Fiber Contractile Proteins Structural Proteins The Contractile Unit Organization of the Contractile Unit Cross-Bridge Interaction Types of Muscle Contraction **The Motor Unit** Organization of the Motor Unit Recruitment of Motor Units Muscle Structure Fiber Types Muscle Architecture: Size, Arrangement, and Length Muscular Connective Tissue Organization of Connective Tissue in Muscle Parallel and Series Elastic Components of Muscle Muscle Function, Muscle Tension Passive Tension Active Tension Isometric Length-Tension Relationship Force-Velocity Relationship Types of Muscle Action, Production of Torque Interaction of Muscle and Tendon			

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	Muscle Action under Controlled Conditions			

	Summary of Factors Affecting Active Muscle Tension Classification of Muscles Based on Role of the Muscle in Movement Based on Muscle Architecture Based on Length of the Moment Arm **Factors Affecting Muscle Function** Types of Joints and Location of Muscle Attachments Number of Joints Passive Insufficiency Sensory Receptors **Effects of Immobilization, Injury, and Aging Immobilization** In Shortened Position In Lengthened Position Injury Overuse Muscle Strain Eccentric Exercise-Induced Muscle Injury Aging Fibre Number and Fibre Type Changes Connective Tissue Changes			
	Unit – III	**15**		
	.Components of the Shoulder Complex Sternoclavicular Joint Sternoclavicular Articulating Surfaces Sternoclavicular Disk Sternoclavicular Joint Capsule and Ligaments Sternoclavicular Motions Sternoclavicular Stress Tolerance Acromioclavicular Joint Acromioclavicular Articulating Surfaces Acromioclavicular Joint Disk Acromioclavicular Capsule and Ligaments Acromioclavicular Motions Acromioclavicular Stress Tolerance Scapulothoracic Joint Resting Position of the Scapula Motions of the Scapula Scapulothoracic Stability Glenohumeral Joint Glenohumeral Articulating Surfaces Glenoid Labrum Glenohumeral Capsule and Ligaments			

	Coracoacromial Arch ,Bursae , Glenohumeral Motions **Static Stabilization of the Glenohumeral Joint in the Dependent Arm** **Dynamic Stabilization of the Glenohumeral Joint** Integrated Function of the Shoulder Complex Scapulothoracic and Glenohumeral Contributions Sternoclavicular and Acromioclavicular Contributions Upward Rotators of the Scapula **Structural Dysfunction** Muscles of Elevation ,Deltoid Muscle Function Supraspinatus Muscle Function Infraspinatus, Teres Minor, and Subscapularis Muscle Function Upper and Lower Trapezius and Serratus Anterior Muscle Function Rhomboid Muscle Function Muscles of Depression Latissimus Dorsi and Pectoral Muscle Function Teres Major and Rhomboid Muscle Function **5.The Elbow Complex** • Describe the structure of the humeroulnar and humeroradial joints including articulating surfaces, joint capsule, ligaments and muscles. • Describe the function of the humeroulnar and humeroradial joints including the axis of motion, range of motion, muscle action. • Describe the structure of the superior and inferior radioulnar joints. • Describe the function of the superior and inferior radioulnar joints. • Describe the mobility and stability of the elbow complex and its relationship to hand and wrist. • Describe the effects of injury and the resistance to longitudinal compression forces, to distraction forces and to medial lateral forces. • Describe the following: • All of the articulating surfaces associated with each of the following joints-humeroulnar, humeroradial, superior and inferior radioulnar. • The ligaments associated with all the joints of the elbow complex.			

	Identify the following: • Axis motion for supination and pronation and flexion and extension. ○ The degrees of freedom associated with each of the joints of the elbow complex. • Factors limiting the range of motion in flexion and extension. d Factors that create the carrying angle. • Factors limiting motion in supination and pronation. Compare the following: • The translatory and rotatory components of the brachioradialis and brachialis at all points in the range of motion. • The moment arms of the flexors at any point in the range of motion. Muscle activity of the extensions in a closed kinematic chain with activity in an open kinematic chain. • The role of pronator teres with the role pronator quadratus. • The role of biceps with that of brachialis. • The resistance of elbow joint to longitudinal forces with its resistance to compressive forces. • The features of a classic tennis elbow joint to longitudinal tensile forces with its resistance to compressive forces. • The role of and structure of the annular ligament with the role and structure of the articular disc.			

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	UNIT - IV	15		

	6.Wrist And Hand Complex • Describe the wrist complex including radiocarpal joint, midcarpal joint and the Ligaments of the wrist complex. • Describe the function of the radiocarpal joint, midcarpal joints including the movements and muscles involved. • Describe the hand complex including: Structure of fingers (Carpometacarpal, Metacarpophalangeal and Interphalangeal joints fingers, ligaments, Range of Motion) • Describe the finger musculature including Extrinsic and MCP, PIP and DIP joint function and intrinsic finger muscles. • Describe the structure of the carpometacarpal, MCP and IP joints of thumb. Describe the structure including Extrinsic and intrinsic thumb muscles. • Describe Prehension, Power, Cylindrical, and Spherical and Hook grips. • Describe prehension handling, pad to pad, tip to tip and pad to side prehension and functional position of wrist and hand. Describe the following: • The articular surfaces of the joints of the wrist and hand complex. • The ligaments of the joints of the wrist and hand, including the function of each. • Accessory joint structures found in the wrist and hand including the function of each. • Types of movements and types of motion of the radiocarpal joint, the midcarpal joint and the total wrist complex. • The sequence of joint activity occurring from full wrist flexion to extension including the role of scaphoid, the sequence of joint activity in radial and ulnar deviation from neutral. • The role of wrist musculature in producing wrist motion. • Motions and ranges available to joints of the hand complex. • The gliding mechanisms of the extrinsic finger flexors. • The structure of the extensor mechanism, including the muscles and ligaments that compose it.			

	• How M.C.P extension occurs, including the muscles that produce and control it. • How flexion and extension of the PIP joint occur, including the muscular and ligamentous forces that produce and control these movements. • How flexion and extension of DIP joints occur, including the muscular and ligamentous forces that produce and control these movements. • The role of the wrist in optimizing length-tension in the extrinsic hand muscles. • The activity of reposition, including the muscles that perform it. The functional position of the wrist and hand. Differentiate between • The role of the interossei and lumbrical muscles at the MCP and IP joints. • The muscles used in cylindrical grip to those active in spherical grip, hook grip, and lateral prehension. • The muscle that is active in pad-to-pad, tip-to-tip and pad to side prehension. Compare • The activity of muscles of the thumb (in opposition of the thumb to the index finger) with the activity of those active in opposition in the little finger. • The characteristics of power grip with those of precision handling. • The most easily disrupted form of precision handling that may be used some on without any active hand musculature; what are the pre-requisites; for each			
	Total Hours (Theory /Practical / SPT)	**60**		

Reference

1. Joint structure and function by Cynthia.c. Norkin
2. Kinesiology the mechanics and patho mechanics of human movements. Carol A oatis.
3. Mechanics of normal and pathological locomotion by Arthur. Steindler.
4. Basic biomechanics of the musculoskeletal system by Nordin and Frankel.

PRINCIPAL
FACULTY OF PHYSIOTHERAPY
MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)

COURSE TITLE: MICROBIOLOGY& PATHOLOGY / PHARMACOLOGY

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Microbiology& Pathology / Pharmacology (Core theory)	**60**	**60**		**04**		**4**		**4**

Learning Objectives:

At the end of the course,

1. The students will portray the in-depth clinical knowledge Human system wise.
2. The student will be able to understand the clinical conditions of the viruses and bacteria with the proper demonstration.
3. The Student will be able to extract the clinical pathology with the clear picture of human body mechanism.
4. The proper understanding of various drugs and its clinical aspects for each of the conditions.
5. Incorporate the overall considerate of pathological, microbiological and pharmacological aspects as a standard requirement for the physiotherapy.

S No	Title of Content	Hours of teaching (4 Credits = 60 Hrs) Theory
1.	Introduction and history of microbiology	1
2.	General lectures on Micro-organisms Classification Shape and arrangement, special characteristics- spores, capsules, enzymes, motility, reproduction	1
3.	Disinfection and antiseptics	2
4.	Sterilization and asepsis	2
5.	Antibacterial agents- fundamental aspect, susceptibility tests	2
6.	Infection- Source of infection Portals of entry Spread of infection	2
7.	Non-specific immunity	1
8.	Immunity-natural and acquired	1
9.	Allergy and hypersensitivity	2
10.	Outline of common pathogenic bacteria and diseases produced by them. Treatment and prevention. Respiratory tract infections. Meningitis, Enteric infection ,Anaerobic infection, Urinary tract infection. Leprosy, tuberculosis and miscellaneous infections. Wound infection. Sexually transmitted diseases. Hospital acquired infections.	4
11.	Pathogenic yeasts and fungi	1
12.	Virology- viral infection with special mention about hepatitis, poliomyelitis and rabies	1
TOTAL HOURS		**20**
PATHOLOGY		
1.	Introduction to pathology	1
2.	Cell injury: Introduction, necrosis, apoptosis, gangrene	1
3.	Degenerations and intracellular accumulations: Fatty changes, pigments, pathologic calcification, amyloidosis	1

4.	Acute inflammation: Definition, signs, aetiology, vascular and cellular events, mention chemical mediators briefly	1
5.	Chronic inflammation: Definition, types, e.g. of granulomas	1
6.	Healing and Repair: Definitions of healing, repair, regeneration, primary and secondary healing, complications of healing, factors affecting healing, fracture healing	1
7.	Introduction to infections, tuberculosis, leprosy, typhoid fever, syphilis, HIV	1
8.	Fluid and hemodynamic disorders: Oedema, hyperaemia, haemorrhage, congestion, shock, thrombosis, embolism: pulmonary, fat and air embolism, ischemia and infarction	1
9.	Deficiency diseases: Vitamin deficiencies: A, D, E, K, B Complex, C	1
10.	Cellular adaptations: Definitions and examples of atrophy, hypertrophy, hyperplasia, aplasia, metaplasia and dysplasia. Neoplasia: Definitions, terminologies, classification, differences between benign and malignant tumours, spread of tumours, etiology and carcinogens, diagnosis of neoplasia, tumour makers. Specific tumours: lipoma, chondroma, squamous cell carcinoma, basal cell carcinoma, melanoma, teratoma, rhabdomyoma and rhabdomyosarcoma	1
11.	Haematology: RBC disorders: erythropoiesis, classification of anaemia, investigation and general features of anaemia, iron deficiency and megaloblastic anaemia in brief. What are haemolytic anaemia, causes of haemolytic anaemia with examples of congenital and acquired types of haemolytic anaemia WBC disorders: leucopoiesis, causes of leucocytosis and leukopenia, what is agranulocytosis, clinical features and causes of agranulocytosis. Leukaemia: Definition, classification, clinical features and diagnosis in brief Bleeding disorders: Classification, thrombocytopenia, haemophilia, DIC	1
12.	Cardiovascular system: Blood vessels: Aneurysms, atherosclerosis, TAO, Buergers disease, Raynaud's Congenital heart diseases: ASD, VSD, Co arctation of the aorta, PDA in brief. Rheumatic fever and rheumatic heart disease, infective endocarditis, myocardial infarction Respiratory system: Pneumonias, emphysema, chronic bronchitis, bronchial asthma, bronchectasis, lung abscess, ARDS	3
13.	Autoimmune disorders: Introduction, rheumatoid arthritis, SLE,	4

	systemic sclerosis, Psoriasis and psoriatic arthritis Bone and Joint: Definition and classification of developmental disorders, Paget's disease, osteoporosis, osteomyelitis: pyogenic and tuberculosis, bone tumours: osteosarcoma, giant cell tumour, Ewing's sarcoma, chondrosarcoma and multiple myeloma, osteoarthritis, infectious and tuberculosis arthritis Muscle disorders: Myopathies, poliomyelitis, myositis ossificans, Volkmann's ischemic contracture	
14.	Urinary system: Clinical manifestations of renal disease and mechanisms of renal failure. Central Nervous System: Traumatic vascular injury, cerebrovascular diseases, hydrocephalus, viral encephalitis, stroke, brain abscess, meningitis, Brain tumours: Classification and clinical effects	2
	TOTAL HOURS	**20**
	PHARMACOLOGY	
1.	General Pharmacology - General Principles of Pharmacology – Drug formulations - Routes of administration of drugs - Drug receptors - Pharmacodynamics – Pharmacokinetics - Adverse drug reactions – Drug-drug interactions	2
2.	Drugs acting on CNS : · Analgesics – Narcotic and Non-narcotic agents, COX II inhibitors · Sedatives, Anaesthetics – General Anaesthetics – Gaseous and Intravenous anaesthetics - Pre aesthetic medication. · Psychotropic drugs - Tranquillisers – Anti depressants · Antiepileptic	2
3.	Drugs acting on PNS: · Sympathomimetic and Sympatholytic drugs · Parasympathomimetic and Parasympatholytic drugs · Skeletal muscle relaxants · Local anaesthetics - mode of action – Dosage & toxicity.	2
4.	Drugs acting on CVS · Drugs used in Congestive Cardiac Failure · Antihypertensive · Vasodilators and Vasoconstrictors · Pharmatherapeutic management of Shock	2
5.	Drugs acting on Hemopoietic System: · Hematinics- Iron, Vit B 12 and Folic acid · Hemostatic agents, Anticoagulants : Fibrinolytic and	2

	Ant platelet agents	
6.	Drugs acting on the Urinary System: · Diuretics - Acidifiers and Alkalinizers – Antiseptics	2
7.	Drugs acting on Endocrine system: · Hypothalamic and Pituitary hormones · Thyroid and Antithyroid Drugs · Corticosteroids · Insulin and Anti-diabetic drugs · Sex hormones and Contraceptives corticoids: · Histamine & Antihistaminic · Drugs used to prevent Motion sickness	2
8.	Drugs acting on GIT: Drugs for Peptic Ulcer - Emetics & Antiemetics – Antidiarrhoeals – Anorexic agents	2
9.	Drugs acting on Respiratory system: Bronchodilators - Antitussive agents	2
10.	Antimicrobials & Antineoplastic agents : Sulphonamides – Penicillin's - Beta lactam antibiotics – Quinolones-Aminoglycosides – Macrolides – Tetracyclines – Chloramphenicol Antifungal agents Ant amoebic agents Antiviral agents – including Drugs used in HIV and Hepatitis B Antineoplastic chemotherapeutic agents	2
TOTAL HOURS		**20**

REFERENCE

1. Text book of microbiology by Anantha narayan and paniker.
2. Microbiology for physiotherapy students by B.S. Nagoba.
3. Pathology implication for the physical therapist by c.goodman.
4. Essential pathology by harsh mohan.
5. Text book of pharmacology bhathmaja Udyakumar.
6. Oxford text book of clinical pharmacology and drug therapy by J.K Aronson.

SEMESTER 4

EXERCISE THERAPY WITH SOFT TISSUE MANIPULATION-II

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Exercise therapy with soft tissue manipulation-II (Core theory)	**150**	**60**	**90**	**04**	**06**	**4**	**3**	**7**

PRINCIPAL
FACULTY OF PHYSIOTHERAPY
MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)
No.12, Vembuliamman Koil Street, West K.K.Nagar, Chennai-78.

Learning Objectives

At the end of the course the student will be able to

- Analyze Normal human posture [static &dynamic] & various Normal Musculo skeletal movements during Gait and in activities of daily living
- Acquire the skill of assessment of Range of motion of the joints and understand mobility of joints
- Describe types of Goniometer, merits and demerits of goniometry and to demonstrate and acquire the skill of measuring ROM with goniometer
- Describe walking aids and its measurement
- Acquire a skill of assessment of limb length/girth measurement on Models.
- Demonstrate and acquire the skill of relaxation
- Describe the movements of the Thorax during breathing

EXERCISE THERAPY WITH SOFT TISSUE MANIPULATION-II			
Title of Content	Lecture	Practical	SPT
Unit-I			
Gait • Introduction • Definition • Gait cycle • Phases of gait • Muscular activity during stance & swing phase • Characteristic of normal gait • Vertical displacement of COG (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 • Pathological gait Trendlenburg 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, Anterior trunk bending, Posterior trunk bending.	4	3	3
Relaxation- definition, types of relaxation, relaxation techniques	2	2	1
Posture • Definition • Postural control • Types of posture-Standing & Dynamic • Faulty or Abnormal postures:- -Excessive Lordosis -Kyphotic lordosis - Sway back -Flat back -Flat neck	3	1	1

-Scoliosis -Forward head • Assessment of posture			
Unit-II			
Joint mobility- joint ranges(outer,middle,inner) joint movements(anatomic ,accessory),causes of joint range limitation, prevention of joint stiffness, positioning in physiologic resting position. • Describe Forced passive movements- amall and large amplitudes • Explain Accessory movements:- glides- posterior, anterior, superior, inferior, traction, approximation • Indications and contraindications for mobilization of joint, home programme management.	6	4	2
Goniometry- Describe the following : normal range of various joints ,description of goniometer, range of measuring system, techniques of goniometer.	2	8	8
Unit-III			
Coordination- causes of in-coordination, exercises to improve coordination – Frenkle exercise	5	5	3
Balance training: Definition and Key terms, Balance control, Components of balance, Balance Impairment, Examination of Impaired Balance, Balance training Exercises.	4	3	3
Suspension therapy- definition, types, parts, advantages and disadvantages, indications and contraindications Types of suspension therapy: axial, vertical, pendular Techniques of suspension therapy for upper limb Techniques of suspension therapy for lower limb	6	6	6
Proprioceptive Neuromuscular Facilitation Definitions & goals Basic neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb Procedure: components of PNF Techniques of facilitation Mobility: Contract relax, Hold relax, Rhythmic initiation Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization Stability: Alternating isometric, rhythmic stabilization Skill: timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal	6	5	4
Unit-IV			
Walking aids	6	6	4

1. Definition 2. Indication 3. Types of walking aids Crutches ,Canes, Walkers, Wheel chair 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, and three point gait, PWB, NWB 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 gaits 6.Walkers 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 Measurement of limb length, girth			
Unit-V			
Aerobic Exercises – Definitions, Physiological response to Aerobic Exercise, Evaluation of aerobic capacity – exercise testing, Determinant of Aerobic Exercise, Physiological Changes with Aerobic Training, Aerobic Exercise Program, Applications of Aerobic Program in patients with chronic illness.	4	-	-
Hydrotherapy: Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Therapeutic Exercises in Hydrotherapy, Special equipment used.	3	-	-
Unit-VI			
Breathing Exercises: Aims and Goals of Breathing Exercises, Procedures of Diaphragmatic Breathing,	6	6	4

Segmental Breathing, Pursed-Lip Breathing, Preventing and Relieving Episodes of Dyspnoea, Positive Expiratory Pressure Breathing, Respiratory Resistance Training, Glossopharyngeal Breathing. Exercises to mobilize the chest, Postural Drainage, Manual Technique used in Postural Drainage, Postural Drainage Positions, Modified Postural Drainage			
Individual and group, group exercises Advantages and Disadvantages, Organisation of Group exercises, Recreational Activities and Sports	3	1	1
Total Hrs(Theory, Practical & SPT) = 150	60 hrs	50 hrs	40 hrs

Supervised Practical training (SPT) (include practice session, assignment, journal presentation, seminar presentation etc)

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

Reference

1. Principles of Exercise therapy by Dena Gardiner.
2. Therapeutic exercise foundation and techniques by Carolyn Kisner.
3. Practical exercise therapy by Margarat Hollis.
4. Text book of therapeutic exercise by S. Lakshmi Narayan.
5. Measurement of joint motion-goniometery - Cynthia Norkins
6. PNF – Knott and Voss
7. Suspension Therapy in Rehabilitation-Margaret Hollis

COURSE TITLE: BIO- MECHANICS AND APPLIED ANATOMY &KINESIOLOGY-2

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	

	Bio- mechanics and applied anatomy &kinesiology-2 (Core theory)	**60**	**60**		**04**		**4**		**4**

Learning Objective:

At the end of the course, the candidate will

1. To acquire the knowledge of axis and planes, to review the anatomy and each movement occurring at each joint. To acquire the knowledge of forces acting at various joints and to acquire the knowledge of muscle and joint work in activities of daily living

COURSE CONTENT				
S. no.	**Title of the Content**	**Hours of teaching/Learning**		
		Theory	Practical	SPT
1	**UNIT 1**	**15**	-	-
	1.THE VERTEBRAL COLUMN • Articulations, ligaments and muscles, typical vertebra, intervertebral disc. • Describe factors affecting stability and mobility. • Regional structure and function of cervical, dorsal, lumbar and sacral vertebrae. • Describe the muscles of the vertebral column – flexors, extensors, rotators and lateral flexors. • Describe the effects of injury and developmental deficits.	15	-	-
	Describe the following: The curves of the vertebral column using appropriate terminology. The articulations of the vertebral column. The major ligaments of the vertebral column. The structural components of typical and atypical vertebrae. The intervertebral disc. Regional characteristics of vertebral structure. Motions of the vertebral column. • Lumbar-pelvic rhythm. • Rotation of the vertebrae in each region. Movements of the rib during rotation.	01	-	-

	Identify the following: • Structure that provide stability for the column. • Muscles of the vertebral column and the specific functions of each. • Ligaments that limit specific motions (i.e. flexion, extension, lateral flexion, rotation) • Forces acting on the vertebral column during specific motions. Explain the following: • The relationship between the intervertebral disc and the facet joints during motions of the vertebral column. • The role of the intervertebral disc in stability and mobility. • The effects of forces acting on the structural components during the motion and at rest. Analyse the following: • The effects of disease process, injury, or other defects in the vertebrae. • The effects of an increased lumbo-sacral angle on the pelvis and lumbar vertebral column. **2. POSTURE** • Static and Dynamic Postures Postural Control • Major Goals and Basic Elements of Control Absent or Altered Inputs and Outputs Muscle Synergies Describe the effects of gravity and indicate the location of the gravity line in the sagittal plane in optimal posture. Analyse posture with respect to the optimal alignment of joints in the Antero – posterior and lateral views. Describe • The position of hip, knee and ankle joints	01 02 03	-	-

	in optimal erect posture. • The position of body's gravity line in optimal erects posture, using appropriate points of reference. • The effects of gravitational moments of body segments in optimal erect posture. • The gravitational moments acting around the vertebral column, pelvis, hip, knee and ankle in optimal erect posture. Postural deviation • The following postural deviations: pes-planus, halux-valgus, pes-cavus, idiopathic scoliosis, kyphosis and lordosis. • The effects of the above postural deviations on body structures i.e. ligaments, joints and muscles. Determine: • How changes in the location of the body's gravity line will effect gravitational moments acting around specific joints axes. • How changes in the alignment of body segments will affect either the magnitude or the deviation of the gravitational moments. • How changes in the alignment will affect supporting structures such as ligaments , joint capsules, muscles and joint surfaces. • Effects of Age, Pregnancy, Occupation, and Recreation on Posture .			
2	**UNIT -2**	**15**	-	-
	3. HIP COMPLEX Describe the general features of the hip joint including the articulating surfaces on the pelvis & the femur; Angulations; Angle of indication; Angle of torsion; Internal architecture of femur and pelvis; Joint capsule. Ligaments & Muscles (flexors, extensors – one joint extensors, two joint extensors, Adductors medial rotators and lateral rotators). Describe the function of hip – Rotation between pelvis, lumbar spine and hip; Pelvic motion – Anterior posterior pelvic tilting, lumbar pelvic	02	-	-

	rhythm, lateral pelvic tilting, and pelvic rotation. • Summarize the pelvic motions in the static erect posture. • Describe femoral motion. Describe hip stability in erect bilateral stance, sagittal plane equilibrium and unilateral stance. o Describe reduction of forces with weight shifting and using a cane and deviations from normal in muscular weakness & bony abnormalities. Describe the following: • The articulating surfaces of the pelvis and femur. • The structure and function of the trabecular systems of the pelvis and femur. The structure and function of the ligaments of the hip joint. • The angle of inclination and the angle of torsion. • The planes and the axes of the following pelvic motions and the accompanying motions at the lumbar spine and hip joints, pelvic rotation, and anterior, posterior and lateral tilting of the pelvis. • The muscle activity that produces tilting and rotation of the pelvis. • Motions of the femur on the pelvis including planes and axes of motion. • The structure and function of all the muscles associated with the hip joints. The forces that act on the head of the femur. • The position of greatest stability at the hip. Explain the following: • How sagittal and frontal plane equilibrium are maintained in erect bilateral stance. • How frontal plane equilibrium is achieved in unilateral stance. d How force acting on the femoral head may be reduced. • How the function of the two joint muscles at the hip are affected by changes in the position of the knee and the hip.	02 03		

	• The functional and structural relationship among the hip, knee, pelvis and lumbar spine. Compare the following • Forces acting on the femoral head in erect bilateral stance with the forces acting on the head in erect unilateral stance. • Coxa valga with coxa vara on the basis of hip stability and mobility. • The motions that occur at the hip, pelvis and lumbar spine during forward trunk bending with the motions that occur during anterior and posterior tilting on the pelvis in the erect standing position. • Antero version with retroversion on the basis of the hip stability and mobility. • The structure and function of the following muscles – flexors, extensors, abductors, adductors, lateral and medial rotators. **4.THE KNEE COMPLEX** • Describe the structure of the tibio femoral joint articulating surfaces on the femur and tibia, the menisci, joint capsule and bursae, ligaments and the other supporting structures, anterior – posterior and medio – lateral stability; muscle structure; knee flexors & extensors; axes of knee complex: mechanical axis, anatomic axis and axis of motion. • Describe the function of the tibiofemoral joint: range of motion. Flexion, extension, rotation, abduction, adduction, locking and unlocking; function of menisci and muscle function. • Describe the structure of the patello femoral joint. Describe the function of the patello femoral joint. • Describe the effects of injury and disease in the tibiofemoral and patellofemoral joints. Describe the following			

	• the articulating surfaces of tibiofemoral and patellofemoral joints. The joint capsule. • The anatomic and mechanical axes of knee. • Motion of the femoral condyles during flexion ad extension in a closed kinematic chain. • Motion of the tibio in flexion & extension in an open kinematic chain. Draw: • The Q angle when given an illustration of the lower extremity. • Moment arm of the quadriceps at the following degree of knee flexion: 90 deg., 130 deg., 30 deg., 10 deg. • The action lines of vastus lateralis and the vastus medialis oblique. Locate: • The origins and insertion of all the muscles at the knee. The bursae surrounding the knee. • The attachments of the ligaments of the, medial and lateral compartments. Identify: • Structures that contribute to the medial stability of the knee including dynamic and static stabilizers. • Structures that contribute to the lateral stability of the knee including dynamic and static stabilizers. • Structures that contribute to the posterior stability of the knee including dynamic and static stabilizers. • Structures that contribute to the anterior stability of the knee including dynamic and static stabilizers. • Structures that contribute to the rotary of knee. The normal forces that are acting on the knee. Compare: • The knee and the elbow joint on the basis	02		

	of similarities / dissimilarities in structure and function. • The lateral with the medial meniscus on the basis of the structure and function. d The forces on the patellofemoral joint in full flexion with full extension. • The action of quadriceps in an open kinematic chain with that in a closed kinematic chain. • The effectiveness on the hamstrings as knee flexors in each of the following hip positions: hyperextension, ten degrees of flexion and full flexion (open kinematic chain). • The effectiveness of the rectus femoris as a knee extensor at sixty degree of knee flexion with its effectiveness at ten degrees of knee flexion. Explain • The function of the menisci. • How a tear of the medial collateral ligament may affect the joint function. • The function of the suprapatellar, gastrocnemius, infrapatellar and prepatellar bursae. • Why the semi flexed position of the knee is the least painful position. • Why the knee may be more susceptible to injury than the hip joint.			
	UNIT -3	**15**		
	5.THE ANKLE – FOOT COMPLEX: • Describe the structure ,ligaments, axis and function of the following: ankle joint, tibiofibular joints, subtalar joints, talocalcaneonavicular joints, transverse tarsal joint, Tarsometatarsal joint, plantar arches, metatarsophalangeal joints, interphalangeal joints. Define the terminology unique to the ankle foot complex, including inversion, eversion, pronation, supination, dorsiflexion, plantar flexion, flexion, extension, adduction and abduction.	03	-	-

	Describe: • The compound articulations of the ankle, subtalar, talocalcaneonavicular, transverse tarsal and Tarsometatarsal joints. • The role of the tibiofibular joints and supporting ligaments. • The degrees of freedom and the range of motion available at the joint of the ankle and the foot. • The significant ligaments that support the ankle, subtalar and transverse tarsal joints. • The tri planar nature of the ankle joint motion. • The articular movements that occur in the weight-bearing subtalar joint during inversion-eversion. • The relationship between tibial rotation and subtalar/ talocalcaneonavicular inversion – eversion. • The relationship between hind foot inversion, version and mobility- stability of the transverse tarsal joint. • The function of the Tarsometatarsal joints, including when motion at these joints is called upon. • Supination- pronation of the fore foot at the Tarsometatarsal joints. Distribution of weight within the foot. Arches of foot • The structure and function of the plantar arches including the primary supporting structure. • When muscles supplement arch support, including those muscles that specifically contribute. • The effects of toe extension on the plantar arches. • The general function of the extrinsic muscles of ankle and foot.	03 05	-	-

	• The general function of the intrinsic muscle of the foot.			
1	**UNIT 4**	**15**	-	-
	6.GAIT The stance, swing and double support phases of gait. The subdivisions of the stance and swing phases of gait. The time and distance parameters of gait. Describe: • Joint motion at the hip, knee and ankle for one extremity during a gait cycle. • The location of line of gravity in relation to the hip, knee and ankle during the stance phases of gait. • The gravitational moments of force acting at the hip, knee and ankle during the stance phase. Explain: • Muscle activity at the hip, knee and ankle throughout the gait cycle, including why and when a particular muscle is active and type of contraction required. • The role each of the determinants of gait. • The muscle activity that occurs in the upper extremity and trunk. Compare • Motion of upper extremities and trunk with motion of pelvis and lower extremities. • The traditional gait terminology with new terminology. • Normal gait with a gait in which there is a weakness of the hip extensors and abductors. • Normal gait with a gait in which there is unequal leg lengths. Kinetics & Kinematics of various Activities of Daily Living – supine to sitting, sitting to standing, squatting, climbing up & down, lifting, pulling, pushing, overhead activities and patho mechanics of these.		- - - - - -	- - - - - -

	Stair and Running Gaits Stair Gait Running Gait Joint Motion and Muscle Activity Moments, Powers, and Energies Summary Effects of Age, Gender, Assistive Devices, and Orthoses Abnormal Gait, Structural Impairment, Functional Impairment, Pain, Adaptation/Compensation			
	Total Hours (Theory)	**60**		

Reference

1. Joint structure and function by Cynthia.c. Norkin
2. Kinesiology the mechanics and patho mechanic of human movements. Carol A oatis.
3. Mechanics of normal and pathological locomotion by Arthur. Steindler.
4. Basic bio mechanic of the musculoskeletal system by Nordin and Frankel.

GENERAL MEDICINE, GENERAL SURGERY, PAEDIATRICS, GERIATRICS

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	General medicine, General surgery, Paediatrics, Geriatrics **(Core theory)**	**60**	**60**		**04**		**4**		**4**

COURSE DESCRIPTION

The course will enable students to understand the conditions in general medicine, General surgery, paediatrics and Geriatrics and its application in relation with physiotherapy.

COURSE OBJECTIVES

The objective of this course is that after 60 hours of lectures and demonstrations so that student will be able to understand the causes, findings, management in relation with physiotherapy.

s.no	Title of content	Hours of teaching/ Learning		
1	**GENERAL MEDICINE**	**Theory**	**Practical**	**SPT***
	INFECTIONS • Bacteria – tetanus • Viral - Herpes simplex, zoster, varicella, measles, German measles, hepatitis B, AIDS • Protozoal – Filarial	2		
	HAEMATOLOGY Iron deficiency anaemia, B 12, folic acid deficiency anaemia, Types of bleeding diathesis , Haemophilia	2		
	RESPIRATORY SYSTEM **Define, aetiology, pathogenesis, pathology, clinical features, management of the following** COPD – chronic bronchitis and emphysema Pneumonia – lobar, bronco, aspiration Asthma Bronchiectasis	4		

	Tuberculosis Lung abscess RLD – occupational lung diseases Chest wall deformities – funnel chest, pigeon chest, barrel chest, kyphoscoliosis46			
	CARDIO-VASCULAR SYSTEM **Define, aetiology, pathogenesis, pathology, clinical features, management of the following** • Ischemic heart diseases • Myocardial infarction • Angina pectoris • Heart failure • Rheumatic fever • Infective endocarditis • Hypertension • Congenital heart disease – ASD, VSD, tetralogy of Fallot, PDA, COA, AS, AR, MS, MR • Pulmonary infarction , pulmonary embolism • DVT	6		
	BONE, JOINT AND CONNECTIVE TISSUE DISORDERS **Define, ethology, clinical findings, pathology, management of** • Osteoarthritis • Rheumatoid arthritis • Systemic lupus erythematous • polymyositis , dermatomyositis • polyarthritis nodosa, scleroderma	3		
	RENAL DISEASES Acute and Chronic renal failure • Urinary tract infection - common clinical conditions complicated by UTI	1		
	METABOLIC DISEASES Diabetes mellitus – Types of diabetes, complication, management of Obesity	1		
	NEUROLOGY • CVA – thrombosis, embolism, haemorrhage • Extra pyramidal lesion – parkinsonism, athetosis, chorea, dystonia • Disorders of muscle – myopathy, SMA, MND, Syringomyelia • Multiple sclerosis • Infections of nervous system – encephalitis, neurosyphilis, meningitis, transverse Myelitis, tabes dorsalis, TB spine • Epilepsy • Alzheimer's disease	6		

	• Disorder of myoneural junction – myasthenia gravis			
	GENERAL SURGERY	**Theory**	**Practical**	**SPT***
	Describe abdominal surgical incisions Outline the incision and its complications of • Appendicectomy • Mastectomy • Hysterectomy • Colostomy • Herniorrhaphy • Cholecystectomy • Ileostomy • Thyroidectomy • Adrenalectomy • Prostatectomy	5		
	• Define burns. Classify burns by depth and surface area. Explain aetiology, clinical findings, complication, management, deformities due to burns, plastic surgery procedures in the management of burns.	3		
	• Outline the principles of tendon transfers – emphasis to hand, foot, facial paralysis. Outline the principles of plastic surgery Skin graft/flap – pedicle, tube, muscle flap Indication with burns/ wounds/ulcers Breast reconstruction	3		
	• Hypertrophic scar / keloid management.			
	PAEDIATRICS	**Theory**	**Practical**	**SPT***
	• Describe growth and development of a child from birth to 12 years – physical, social, Adaptive development.	2		
	• Cerebral palsy – Define, aetiology, types, clinical findings, examination, management, briefly outline associated defects – MR, microcephaly, blindness, Hearing and speech impairment, squint, convulsion.	3		
	• Muscular dystrophy – Define, various forms, clinical manifestation disabilities, management.	2		
	• Spina bifida, meningomyelocele – outline development, clinical features, hydrocephalus	2		
	• Medical and surgical management Still disease – classification, pathology, clinical findings, treatment Normal diet of new born and child – dietary calorie, requirement for normal child, Malnutrition, rickets, vitamin D deficiency	3		

	• x-ray demonstrations, ophthalmology, ENT, and obstetrics and gynaecology .	2		
	GERIATRICS			
	Theories of Aging Physiological changes that occur due to aging. Diseases commonly encountered in elderly population • Hypertension • Ischemic heart disease • Cerebrovascular accident • Benign prostatic hyperplasia • Cataracts • Senile Osteoporosis • Deconditioned status • Pneumonia	10		
	Total Hours (Theory)	**60**		

REFERENCE

1. Davidson's principles and practice of medicine
2. Text of pediatric by OP Ghai.
3. Baileys and love short practice of surgery.
4. Oxford hand book of geriatric medicine.

COURSE TITLE: ELECTROTHERAPY I (SEMESTER 5)

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Electrotherapy- I (Core subject)	**150**	**60**	**90**	**04**	**06**	**4**	**3**	**7**

COURSE DESCRIPTION

In this course the student will explore to fundamental skills in application of electrotherapeutic modalities and knowledge of principles, technique, indications, contraindications and effects in the restoration of physical function.

LEARNING OBJECTIVES:

At the end of the course, the candidate will able to

1. Acquire the knowledge of fundamental of physics in the application of electrotherapy and describe the Production &Physiological effects, Therapeutic uses, indication &contraindications of various low/medium Frequency Currents.
2. Acquire the knowledge about the physiology of pain, theories of pain, levels of pain modulation, selection of appropriate modality for Pain modulations.
3. Acquire the skills of application for the purpose of Assessment & Treatment in various clinical significance.

S. No	Title Of Content	Hours of Teaching/ Learning		
		Theory	**Practical**	**SPT***
I	**FUNDAMENTALS OF ELECTROTHERAPY**	**10**		
	Electricity- Static Electricity, Current Electricity- Units of Electricity, Potential difference, Thermionic emission	01		

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	Resistance and Capacitance, Inductance In Series And Parallel, Its Unit ,Principle, Working, Types And Function	02		
	Magnetism - Electromagnetic Induction	01		
	Electronic Components: Direct current and Alternating current Transformer and Chokes - Principle, Working, Types And Function	02		
	Rectifying Devices – Thermionic Valves, Transistors, Full Wave And Half Wave Rectification - Principle, Working, Types And Function	03		
	Chemical effects - Ionization	01		
II	**BASICS OF MUSCULAR &NERVOUS SYSTEM**	**12**		
	✔ Upper Motor Neuron, Lower Motor Neuron, Reflex Arc	01		
	✔ Neuromuscular Junction And Its Transmission Electrical Activity of Nerves and Muscles Physiology Of Muscle Contraction	02		
	✔ Neurophysiology of Pain, Its Receptors, Nerve Fibres And Its Pathways	02		
	✔ Peripheral Nerves And Its Supply & Functions to the Muscles and Applied Clinical Manifestation Dermatomes And Myotomes	04		
	✔ 7th Cranial Nerves And Its Supply & Functions to the Muscles and Applied Clinical Manifestation	02		
	✔ Skin resistance : Factors Affecting Skin Resistance And Methods To Reduce Skin	01		
III	**LOW FREQUENCY CURRENT**	**18**	**22**	**28**
	✔ Galvanic / Direct currents (Continuous & Interrupted) : Principle, Physiological & Therapeutic effects, Indications, Contraindications, Techniques or Methods of Applications, Dangers, Property of Accommodation	02		

	✔ Faradic currents : Principle, Physiological & Therapeutic effects, Indications, Contraindications, Techniques or Methods of Application, Dangers, Surge faradic and Sinusoidal current ✔ Methods Of Treatment in Levels of peripheral Nerve Injury : Proforma For Patients Assessment Treatment Of Patients Condition: Facial Nerve Stimulation Median Nerve Stimulation Radial Nerve Stimulation Ulnar Nerve Stimulation Lateral Popliteal Nerve Stimulation Erbs Paralysis Deltoid Inhibition Quadriceps Inhibition Faradism Under Pressure Faradism Foot Bath	02 14		
IV	**OTHER LOW FREQUENCY CURRENTS**	**04**	**02**	
	✔ Ionotophoresis- Principle, Physiological & Therapeutic effects, Mechanism, Indications, Contraindications, Techniques or Methods of Application, Dangers ✔ Transcutaneous Electrical Nerve Stimulation (T E N S - Principle, Physiological & Therapeutic effects, Pain gate Mechanism, Indications, Contraindications, Techniques or Methods of Application, Dangers ✔ High Voltage Pulsed Galvanic Current ✔ Di dynamic current and Micro current therapy	01 01 01 01		
V	**MEDIUM FREQUENCY CURRENT**	**08**	**12**	**16**
	✔ Interferential therapy: Principle, Production, Physiological & Therapeutic effects, Indications, Contraindications, Techniques or Methods of Application, Dangers ✔ Russian current: Principle, Physiological & Therapeutic effects, Indications, Contraindications, Techniques or Methods of Application, Dangers	02 02		

	✔ Methods Of Treatment Proforma For Patients Assessment Treatment Of Patients Condition: Low Back Pain Periarthritis Shoulder Osteoarthritis Knee Absorption Of Exudates Stress Incontinence	04		
VI	**ELECTRO DIAGNOSTIC TEST**	**04**	**02**	**08**
	✔ Strength Duration Curve Test: Principle of S-D curve, Technique of plotting, Interpretation of normal curves, Advantages and Disadvantages Chronaxie , Rheobase, Masking ✔ Faradic - Galvanic test : Principle, Technique of plotting, Interpretation ✔ IDC test : Principle, Technique of plotting, Interpretation	02 02		
VII	**MISCELLANEOUS**	**04**		
	✔ Outline of Electromyography & Biofeedback ✔ Nerve Conduction Velocity ✔ Electrical Stimulation for Other Cranial Nerves ✔ Combination Therapy ✔ Functional Electrical Stimulation			
	Total hrs (Theory, Practical & SPT) = 150 Hrs	**60 Hrs**	**38 Hrs**	**52 Hrs**

SPT : Supervised Practical training

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

Recommended Textbooks

1. Clayton's Electro therapy- 9th & 10th edition
2. Electro therapy explained –by John Low & Ann Reed, 4th edition
3. Electrotherapy Simplified- by Basanta Kumar Nanda, 2nd edition

Recommended Reference Books

1. Textbook of electrotherapy – by Jag Mohan Singh, 2nd edition
2. Principles and Practice of Electro Therapy –by Joseph Kahn, 3rd edition
3. Electrotherapy Evidence Based Practice – by Sheila Kitchen, 11th edition

PRINCIPAL

COURSE TITLE: ELECTROTHERAPY II (SEMESTER 5)

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Electrotherapy- II (Core subject)	**150**	**60**	**90**	**04**	**06**	**4**	**3**	**7**

COURSE DESCRIPTION

In this course the student will explore to fundamental skills in application of electrotherapeutic modalities and knowledge of principles, technique, methods, indications, contraindications, placement and effects in the restoration of physical function.

LEARNING OBJECTIVES:

At the end of the course, the candidate will able to

1. Acquire the knowledge of fundamental of physics in the application of electrotherapy and describe the Production &Physiological effects, Therapeutic uses, indication &contraindications of various high frequency currents.
2. Acquire the knowledge about the skeletal and physiology of pain, theories of pain, levels of pain modulation, selection of appropriate modality for Pain modulations.
3. Acquire the skills of application for the purpose of Assessment & Treatment in various clinical significance.

s.no	Title of content	Hours of teaching/ Learning

1	Electro therapy-II	Theory	Practical	SPT*
	SHORT WAVE DIATHERMY			
	• Properties of H.F. currents			
	• Sustained and Un sustained,			
	• Damped and undamped,	3		
	• Impedance,			
	• Define nodes and Antinodes. Explain, with examples, the fields, Setup, etc.,			
	• Define wavelength.			
	• Types of high freq. currents (in brief)	1		
	• Production of H.F. currents			
	• Principles,			
	• Construction of apparatus with diagram,			
	• Tuning of machine,	2		
	• Regulation of current.			
	• Methods			
	• Condenser field,			
	• Cable method,			
	• Effects of above methods. Physiological and therapeutic effects of S.W.D.	2	2	
	• Technique of Application			
	• Testing machine,			
	• Preparation of patient,			
	• Types of electrodes,			
	• Position and size to electrodes,			
	• Leads,	4	4	
	• Application of current,			
	• Dosage.			
	• Specific requirement - application of			
	• Condenser field method			
	• Cable			

	• Spacing - need & type, • Position, • Application, • Size of electrode; • Method - type of application. • Dangers and precautions. Pulsed diathermy: Indications and contra-indications. Procedure Proforma For Patients Assessment Treatment Of Patients Condition: Musculoskeletal Neurological condition Women health	2 3	5 3	4 5
	ACTINOTHERAPY • Define heat and temperature (in brief) • Physical effects of heat - (in brief) Transmission of heat (in brief) • Sources of therapeutic heating and its physiological effects. Radiation energy and its properties. • Electromagnetic spectrum - production and its properties. Laws governing radiation. .Skin • Structure, • Depth of penetration. Discuss in brief Piezo - electric effect.	2 3	3	5
	INFRA- RED • I.R. rays - wavelength and frequency, • Types of generators and its working, • Physiological effects,	3		

	• Therapeutic effects and uses. • Technique of Irradiation • Choice of apparatus, • Preparation of patient, • Arrangement of lamp, • Application of treatment, • Duration and Frequency. ❖ Dangers - briefly discuss. ❖ Indications & contra - indications. ❖ Therapeutic uses, Physiological effects.	4	4	5
	MICROWAVE DIATHERMY (M.W.D.) ▪Production - explain with diagram, Explain how the magnetron works, Application of M.W.D, ▪Physiological effects, Therapeutic effects • Technique of application - dosage (in detail) • Indications & contra-indications, Dangers.	3	2	4
	PARAFFIN WAX & MOIST HEAT • Definition • Method. • Effects and uses, Indications & contraindications, Dangers and precautions.	4	2	3
	ULTRASONIC THERAPY • What is U.S. therapy? • Explain with the aid of diagram production of U.S. • Properties of U.S. • reflection, • transmission, • absorption (in detail) • Properties of ultrasonic field:	2		

	depth of penetration in relation to intensity frequency. • Effect on tissues • thermal, • mechanical, • Chemical and biological. • Coupling media. • Pulsed U.S. • Uses of U.S. • Techniques of application Methods • direct contact, • water bath, • Water bag; • Dosage in acute and chronic conditions, • Indications • Contra- indications.	4	4	8
	CRYOTHERAPY • Physical Principles. • Physiological effects and uses • Circulatory response and uses, • Normal Response and uses. • Technique of application • Preparation, • Application, • Modification. • Methods • Ice pack, Ice towel, Immersion, Ice cube. • Indications & contra-indications to treatment.	3 2 2	3 3	3 4
	LASER (H.F.)			

	Define Laser and briefly outline its therapeutic effect, • Type of laser, indications, contra - indications, efficacy, • precautions advisable. • Laser use of condition	4	3	4
	ULTRA VIOLET RADIATION (H.F.) • process of ionization • physician electric arc constructions of lamp • high pressure mercury vapour lamps • kromayer lamp triymite formation cooling spectrum • Physiological and Therapeutic effects in detail - Photosensitization • Indication, • contra- indications • dangers. • Technique of application Test dose, • Local treatment, • General irradiation, • Treatment. • Conditions (common) in which above treatment given. d Sensitizers (in brief) Filters. Comparison between Infrared radiation & Ultra violet radiation.	2 3 2	3	4
	Total hrs (Theory, Practical & SPT) = 150 Hrs	**60**	**41**	**49**

Supervised Practical training (SPT) (include practice session, assignment, journal presentation, seminar presentation etc)

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All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

Recommended Textbooks

1. Claytons Electrotherapy by Forster & Plastangs
2. Electrotherapy Explained by Low & Reed
3. Clinical Electrotherapy by Nelson
4. Electrotherapy Evidene based practice by Sheila Kitchen
5. Physical agents by Michile Cameroon
6. Principles of Electrotherapy by Michile Camreeon
7. Thermal agents by Susan Michlovitz.

COURSE TITLE: BIO-STATISTICS AND RESEARCH METHODOLOGY

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Bio-statistics and Research methodology (Core subject)	**60**	**60**		**04**		**4**		**4**

Learning Objectives

The objective of this course is that after 60 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of statistics and Research in the field of physiotherapy.

	Title of content	Hours of teaching/ Learning (Theory)
1	Introduction to research	4 hrs

.	Concepts and variables	
2.	Research process Steps in detail	6 hrs
3.	Hypothesis-functions of hypothesis in quantitative research, types, characteristics and hypothesis testing	6 hrs
4.	Research design • Basic designs • Factorial design • Repeated measures design • Advantages and disadvantages of experiments • Quasi experimental Research	4 hrs
5.	Collection of data • Methods of data collection • Observational methods • Biophysiological measures	7 hrs
6.	Sampling methods • Populations • Non probability and probability sampling	5 hrs
7.	Importance of research in physiotherapy	4 hrs
8.	Ethical considerations in physiotherapy research	4 hrs
9.	Introduction to statistics	2hrs
10.	Types of variables	3 hrs
11.	Measures of central Tendency	5 hrs
12.	Measures of Dispersion	5 hrs
13.	Significance testing	5 hrs
	Total Hours (Theory)	**60 hrs**

REFERENCES

1. Research methodology methods and techniques C.R. Kothari.
2. **B**io-statistics a methodology for the health sciences by Patrick.
3. Statistical methods by S.P.Gupta

COURSE TITLE: BASICS OF PHYSICS

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Basic of physics (Ability Enhancement)	**30**	**30**		**02**		**02**		**02**

COURSE DESCRIPTION

In this course the student will explore to fundamental skills in the application of basic physics in electrotherapeutic modalities.

LEARNING OBJECTIVES:

At the end of the course, the candidate will able to

1. Acquire the knowledge in basics of physics and will describe the working and Production of electricity, magnetism, electromagnetic spectrum etc.
2. Acquire the knowledge about the electrical components like resistor, capacitor, and valves etc.
3. Acquire the knowledge about the types & Production of various therapeutic electrical currents such as low frequency, medium frequency and high frequency

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
I	**INTRODUCTORY TO PHYSICS**	**08**		
	Basic concept of physics Structure of atom, molecules, elements and compounds, States Of Matter Conductors, Insulators, Potential difference, Thermionic emission Transmission of heat and Physical effects of heat Electricity Static Electricity- Production of Electric Charge Characteristics of charged electrical body Current Electricity- EMF, DC &AC, Thermal effects of electric current-Joule's Law. Units of Electricity-Farad, Volt, Ampere, Coulomb, Watt. Resistance , Capacitance and Inductance Resistance In Series And Parallel, Ohms Law And Its Application Resistors- Principle, Working, Types of Resistor And Function Capacitance In Series And Parallel, Volt And Its Application Condenser/ Capacitor – Principle, Working, Types And Function Inductance In Series And Parallel, Henry And Its Application Inductors - Principle, Working, Types And Function	02 02 04		
II	**BIO-ELECTRONICS**	**12**		

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	Moving coil Milliammeter and Voltmeter - Principle, Working, Types And Function Transformer and Chokes - Principle, Working, Types And Function Rectifying Devices – Thermionic Valves, Semiconductors, Transistors, Metal oxide rectifier - Principle, Working, Types And Function Electric supply- Main Supply, Grid, Switch, Fuse, Electric Shock And Earth Shock Chemical effects - Ionization Direct Current ,Alternating Current , Oscillating current, Circuits			
III	**ELECTROMAGNETISM OF LIGHT & SOUND**	**08**		
	Magnetism Magnetic fields, Electromagnetic Induction, Eddy current. Electromagnetic spectrum Electro Magnetic Radiation Laws Governing E.M.R. Laws of Transmission Reflection, Refraction, Absorption, Attenuation ,Cosine Law, Inverse Square Law, Grothus Law Principles of Sound and its properties Amplifiers and Transducers	03 03 02		
IV	**BIO-PHYSICS**	**02**		
	Action Potential Resting Membrane Potential Transmission of Impulses			
	Total Hours(Theory) =30 Hrs	**30**		

Recommended Textbooks

1. Clayton's Electro therapy- 9th & 10th edition
2. Physical Principles Explained –by John Low & Ann Reed
3. Electrotherapy Simplified- by Basanta Kumar Nanda, 2nd edition

Recommended Reference Books

1. Principles and Practice of Electro Therapy –by Joseph Kahn, 3rd edition

SEMESTER 5

COURSE TITLE: CLINICAL POSTING/PRACTICE

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Clinical posting/practice (clinical rotation CR)	**60**		**60**		**4**		**2**	**2**

Clinical Posting: Our students are posted in various clinical areas/ wards on rotation basis. During clinical posting they are clinically trained to provide Physiotherapy care under supervision. They also trained on patient assessment, performing special test, identifying indications for treatment, ruling out contraindications, bed side approach, decision on treatment parameters, dosage and use of relevant outcome measures under supervision. Evidence based practice will be part of clinical training.

During the clinical practice, student should be able to successfully execute the competencies in assessment, physical diagnosis on ICF basis, plan of care and therapeutic interventions relating to neuromuscular, orthopedic & cardiorespiratory dysfunctions. Student should become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, pediatric and geriatric). Student should learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies during the clinical practice and successfully perform on real patients during the final evaluation of the course.

All the clinical training work should be properly documented, signed by respective clinical in-charge, indexed in a separate file and should be submitted before the final exam.

The students should maintain a clinical log book as per the instruction by respective clinical in charge.

SEMESTER 6

COURSE TITLE: CLINICAL ORTHOPEDICS WITH TRAUMATOLOGY

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Clinical orthopedics with traumatology	**60**	**60**		**4**		**4**		**4**

	(core theory)								

COURSE DESCRIPTION

Following the basic science and clinical science course, this course introduces the student to the orthopaedic conditions which commonly cause disability. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by the orthopaedic pathology on the functioning of the individual.

LEARNING OBJECTIVES

The objective of this course is that after 60 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of orthopaedic conditions causing disability and their management. In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral &internal evaluations) the following objectives of the course.

COURSE CONTENT			
	Title of content	**Hours of Theory**	
	UNIT 1	**15**	-
	Introduction to orthopedics • Introduction to orthopedic terminology. • Types of pathology commonly deal with, • Radiological and Imaging techniques in Orthopedics • Outline of non-operative & management.	**01**	- -
	Traumatology • Fracture: definition, types, signs and symptoms. • Stages of Fracture healing. • Complications of fractures. Prevention & treatment of complications including, Fracture, disease, Volkmann's ischemic contracture, Sudek's atrophy, Carpal tunnel syndrome, Myositis ossificans and Shoulder hand syndrome • Conservative and surgical approaches. • Principles of management – reduction (open/closed, immobilization etc.). • Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative).	**03**	-
	Fractures and Dislocations of Upper Limb **Fractures of Upper Limb** - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:		

	• Fractures of clavicle and scapula. • Fractures of greater tuberosity and neck of humerus. • Fracture shaft of humerus. • Supracondylar fracture of humerus. • Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles. • Both bone fractures of ulna and radius. • Fracture of forearm – monteggia, galaezzi fracture – dislocation. • Chauffer's fracture. • Colle's fracture. • Smith's fracture. • Scaphoid fracture. • Fracture of the metacarpals. • Bennett's fracture. • Fracture of the phalanges. (Proximal and middle.) **Dislocations of Upper Limb and Lower limb** • Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management, surgical management. • Recurrent dislocation of shoulder. • Posterior dislocation of shoulder – mechanism of injury, clinical features and management. • Posterior dislocation of elbow– mechanism of injury, clinical feature, complications & management. **Fracture of Spine** • Fracture of Cervical Spine - Mechanism of injury, clinical feature, complications (quadriplegia); • Management- immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia). • Clay shoveller's fracture. • Hangman's fracture. • Fracture odontoid. • Fracture of atlas. • Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, conservative and surgical management of common fractures around thoracic and lumbar regions. • Fracture of coccyx. • Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.	06 05	- - -
	UNIT -2	**15**	-
	Fractures and Dislocations of Lower Limb	**05**	-

	Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: • Fracture of pelvis. • Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical. • Fractures of trochanters. • Fracture shaft femur—clinical features, mechanism of injury, complications, management-conservative and surgical. • Supracondylar fracture of femur. • Fractures of the condyles of femur. • Fracture patella. • Fractures of tibial condyles. • Both bones fracture of tibia and fibula. • Dupuytren's fracture • Maisonneuve's fracture. • Pott's fracture – mechanism of injury, management. • Bimalleolar fracture , Trimalleolar fracture • Fracture calcaneum – mechanism of injury, complications and management. • Fracture of talus. • Fracture of metatarsals—stress fractures Jone's fracture. • Fracture of phalanges. **Dislocations of Lower Limb** Mechanism of injury, clinical features, complications, management of the following dislocations of lower limb. • Anterior dislocation of hip. • Posterior dislocation of hip. • Central dislocation of hip. • Dislocation of patella. Recurrent dislocation of patella. **Orthopedic Surgeries** Indications, Classification, Types, Principles of management of the following Surgeries : • Arthrodesis • Arthroplasty (partial and total replacement) • Osteotomy • External fixators 3 – • Spinal stabilization surgeries (Harrington's, Luque rod, Steffi plating) etc. **Soft Tissue Injuries** • Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. • Strains- quadriceps, hamstrings, calf, biceps, triceps etc. ¬ Contusions- quadriceps, gluteal, calf, deltoid etc. ¬ Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals .	5	

	• Mechanism of injury, clinical features, managements conservative and surgical of the following sprain: • Meniscal injuries of knee. • Ligamentous injuries of knee. • Ankle Sprain • Wrist sprain **Hand Injuries** Mechanism of injury, clinical features, and surgical management of the following: • Crush injuries. • Flexor and extensor injuries. • Burn injuries of hand **Regional Conditions** Definition, Clinical features and management of the following regional conditions: • Shoulder: Peri arthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Subacromial Bursitis. • Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis (student's elbow). Triceps Tendinitis. • Wrist and Hand: De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture. • Pelvis and Hip : IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis. • Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome). • Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma.	01 03	
	UNIT -3	**15**	
	Diseases of Bones and Joints Outline the etiology ,Clinical features, Complications, Management-- medical and surgical of the following conditions : • Infective: Osteomyelitis, TB Spine and other major joints • Bone tumors: Classification, clinical features, management of (benign/ malignant bone and joint tumors, osteoma, osteosarcoma, osteoclastoma, Ewing's sarcoma, multiple myeloma.	**04**	

	• Perthes, Slipped Capital Femoral Epiphysis , Avascular Necrosis • Metabolic: Osteoporosis, Osteopenia Osteomalacia, Rickets **Amputations** • Definition ,Types • Levels of amputation of both lower and upper limbs • Indications • Complications • Management **Inflammatory and Degenerative Conditions** Causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions : • Osteoarthritis. • Rheumatoid arthritis. • Ankylosing spondylitis • Gouty arthritis. • Psoriatic arthritis. • Hemophilic arthritis. • Still's disease (Juvenile Rheumatoid Arthritis) . • Charcot's joints. Connective Tissue Disorders • Systemic Lupus Erythematosis • Scleroderma • Dermatomyositis • Mixed connective tissue Disease (MCTD) **Deformities** Clinical Features, Complications, Medical and Surgical Management of the Following Congenital and Acquired Deformities. **Congenital Deformities** • CTEV ,CDH, Torticollis, Scoliosis, Flat foot, Vertical talus. • Hand anomalies- syndactyly, polydactyly and ectrodactly. • Arthrogryposis multiplex congenital(amyoplasia congenita). • Limb deficiencies- Amelia and Phocomelia . • Klippel feil syndrome. • Osteogenesis imperfecta(fragile ossium). • Cervical rib. **Acquired Deformities** • Acquired Torticollis, Scoliosis, Kyphosis, Lordosis, Genu varum, Genu valgum, Genu recurvatum, Coxa vara.,Pes cavus, Pes Planus, Hallux rigidus. Hallux valgus, Hammer toe. Metatarsalgia. **Leprosy** Outline the clinical features, management complications of neuritis, muscle paralysis, trophic ulcer of hand and feet deformities.	**03** **03** **4**	

	UNIT 4-Miscellaneous	**15**	-
	Cervical and Lumbar Pathology Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following : • Prolapsed interverbral disc (PID) • Spinal Canal Stenosis. • Spondylosis (cervical and lumbar) • Spondylolysis. • Spondylolisthesis. • Lumbago/ Lumbosacral dysfunction • Sacralisation. Lumbarisation . •Coccydynia. • Hemivertebra **Peripheral nerve injuries** Outline the clinical features and management, including reconstructive surgery of: • Radial, median & ulnar nerve lesions, • Sciatic & lateral popliteal nerve lesions, • Brachial plexus injuries including Erbs palsy, Klumpke's paralysis, and crutch palsy. **Poliomyelitis** • Describe the pathology, microbiology, prevention, management and residual problems of polio; • Outline the treatment of residual paralysis including use oforthosis. • Principles of muscle transfers. **Syndromes** Causes, Clinical features, complications, management conservative and surgical of the following: • Cervico brachial syndrome • Thoracic outlet syndrome • Vertebro- basilar syndrome • Scalenus syndrome • Costo clavicular syndrome • Levator scapulae syndrome • Piriformis syndrome.	04 2 05 04	-
	Total Hours (Theory /Practical / SPT)	**60**	

REFERENCE

1. Text of orthopaedics with traumatology by Natrajan.
2. Clinical orthopedic rehabilitation by Brotzman.
3. Textbook of orthopaedic medicine Vol I & II by James Cyriax – Bailliere

4. Apley and Solomon's system of Orthopaedics and Trauma
5. Essentials of Orthopaedics for Physiotherapists by John Ebenezar – JaypeePublications
6. Practical Fracture Treatment By Ronald McRae, Max Esser – Churchill Livingston
7. Oxford Textbook of Orthopaedic & Trauma By Christopher Bulstrode, Joseph Buckwalter – Oxford University Press
8. Campbell's operative Orthopaedics. - By S. Terry Canale, James H. Beaty – Mosby
9. Fractures & joint injuries By Watson Jones – Churchill Livingston
10. Clinical Orthopaedic Examination By Ronald McRae – Churchill Livingstone

COURSE TITLE: CLINICAL NEUROLOGY

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	

	Clinical Neurology (Core subject)	**60**	**60**		**04**		**04**		**4**

COURSE DESCRITPION

This course intends to familiarize students with medical terminology that explores about the basic sciences focusing on the clinical aspects. It intends to view on clinical neurological condition that commonly cause physical and mental disabilities.

LEARNING OBJECTIVES

At the end of the course, the candidate will

1. Acquire knowledge on basics of nervous system ,its primary & secondary clinical characteristics
2. Be able to explore on various neurological conditions, its clinical significance and management.
3. Acquire skill in application of clinical examination on neurological conditions.
4. Acquire knowledge in ruling out clinical investigations and clinical diagnosis for the plan of care.

COURSE CONTENT				
S. No	**Title Of Content**	**Hours Of Teaching/ Learning**		
		Theory	**Practical**	**SPT***
I	**NEUROANATOMY**	**06**		
	Enumerate the Structure, Function And Applied Anatomy of **1.** The Cerebrum & The Cerebellum **2.** The Sub - Cortex **3.** The Brainstem **4.** The Spinal Cord **5.** Peripheral Nervous System **6.** Autonomic Nervous System			
II	**NEUROPHYSIOLOGY**	**06**		
	Review in brief about the physiological basis on **7.** Tone , Muscle Contraction **8.** Bladder control **9.** Pathways of Motor (Movement, Reflexes) **10.** Pathways of Sensory Functions **11.** Circulation of Brain ,Spinal Cord and Cerebro Spinal Fluid **12.** Vestibular system			
III	**NEUROLOGICAL EXAMINATION**	**10**		

	13. Assessment Subjective examination and Objective examination that include Brief Collection Of History and Framing Hypothesis Examination of Higher Cortical/Mental Function Examination of Cranial Nerves Function Examination of Perceptual Function Examination of Sensory & Motor Function Examination of Balance & Coordination Examination of Posture & Gait Examination of Activities Of Daily Living Examination of Musculoskeletal, Autonomic, Respiratory Functions Management strategies Framing Physical Diagnosis Or Clinical Diagnosis Or Differential Diagnosis Clinical Manifestation & Plan of Care Intervention			
IV	**NEUROLOGICAL INVESTIGATIONS**	**02**		
	14. Brief knowledge and clinical significance of O Radiological Investigation O Computerized Tomography O Magnetic Resonance Imaging O CSF Culture &Lumbar Puncture O Electromyography & Nerve Conduction Velocity & Evoked Potential O Blood And Urine Culture			
V	**NEUROLOGICAL CONDITIONS**	**28**		
	15. Cerebro –Vascular Accidents Define: Stroke, TIA, Risk Factors, Causes, Clinical manifestations, Pathophysiology , Investigations, Differential Diagnosis, Management- Medical & Surgical, Complications	02		
	16. Parkinson's Disease Definition, aetiology, risk factors, pathophysiology, classification, signs & symptoms, investigations, differential diagnosis, medical & surgical management and complications	02		
	17. Trauma			

	Broad localization, first aid and management of sequelae of Head Injury Spinal Cord Injury	04		
	18. Demyelinating disorders Aetiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of: Multiple Sclerosis Transverse myelitis Acute disseminated encephalomyelitis	03		
	19. Motor neuron diseases aetiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders of: Amyotrophic lateral sclerosis Spinal muscular atrophy Bulbar palsy	03		
	20. Infections of brain and spinal cord aetiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical & surgical management and complications of following disorders : Meningitis & Encephalitis Neurosyphilis or Tabes Dorsalis Tuberculosis Poliomyelitis and Post-polio syndrome	03		
	21. Muscular Dystrophy aetiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical & surgical management and complications			
	22. Peripheral nerve disorders aetiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical & surgical management and complications of Peripheral Neuropathy: - Mononeuropathy & Polyneuropathy (Guillian barre syndrome	02 04		

	Diabetic neuropathy) Entrapment Neuropathy :- **23. Congenital childhood disorders** aetiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical & surgical management and complications of following disorders : Cerebral palsy, Hydrocephalus, Spina bifida Arnold Chairi Malformation **24. Cerebellar disorders** aetiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical & surgical management and complication	03 02		
VI	**MISCELLANEOUS**	**08**		
	aetiology, pathophysiology, stages , clinical signs & symptoms, investigations, differential diagnosis, medical & surgical management and complication of following disorders: Alzheimer's disease/ Dementia Myasthenia gravis/ Eaton - Lambert syndrome Epilepsy Tumours of Brain And Spinal Cord **Diseases of spinal cord :** Craniocerebral junction anomalies, Syringomyelia Cervical and lumbar disc lesions, Spinal arachnoiditis			
	Total Hours (Theory)	**60 Hrs**		

Recommended Textbooks

1. Neurology and neuro surgery- Illustrated by Kenneth W Lindsay, 5th edition
2. Cash Text Book Of Neurology For Physiotherapist- by Patricia A Downie, 4th edition
3. Physical Rehabilitation- by Susan B.O'Sullivan, 7th Edition
4. Lange Clinical Neurology – Simon, 10th Edition
5. Manter and Gatz Essentials Of Clinical Neuroanatomy And Neurophysiology – Sid &Sarah, 10th Edition
6. Neurological examination made easy –by Geriant fuller , 6th edition

Recommended Reference Books

1. Clinical Neurology Essential Concepts- Simon J Ellis
2. Neurological Assessment A Clinicians Guide- Jones K

COURSE TITLE: CLINICAL CARDIO – RESPIRATORY CONDITION

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Clinical cardio – respiratory condition (Core subject)	**60**	**60**		**04**		**04**		**4**

Learning Objectives:
At the end of the course, the candidate will-

1. The students will portray the in-depth clinical anatomical and physiological knowledge in heart and lungs.
2. The student will be able to understand the clinical conditions with the proper demonstration and its disabilities.
3. The Student will be able to extract the clinical knowledge with the clear picture of surgical management.
4. The proper utilization of diagnostic approaches and its clinical aspects for each of the cardiorespiratory conditions.
5. Incorporate the pathological aspects of cardio respiratory conditions as a baseline requirement for the physiotherapy approach.

s. no	Title of Content	Hours of teaching (4 Credits = 60 Hrs) Theory
1	ANATOMY AND PHYSIOLOGY OF LUNGS Respiratory system i. Upper respiratory tract ii. Lower respiratory tract – Trachea, Bronchial tree, Bronchopulmonary segments iii. Respiratory unit, hilum of lung. iv. Muscles of respiration	6
	i. Pleura, intra pleural space, intra pleural pressure, surfactant ii. Mechanics of respiration – Chest wall movements, lung & chest wall compliance iii. V/Q relationship, airway resistance iv. Higher centres of Respiration, Neural & chemical regulation of respiration. v. Lung volumes and lung capacities. vi. Pulmonary circulation, Lung sounds, cough reflex. vii. List the mechanical factors involved in breathing. Describe briefly factors, affecting lung compliance and airway resistance	6

2	ANATOMY AND PHYSIOLOGY OF HEART i. Chambers of heart, semi lunar and atria ventricular valves ii. Coronary circulation, conductive system of heart iii. Cardiac cycle, iv. ECG, v. Heart sounds vi. Blood pressure, pulse, cardiac output, Blood supply of heart	6
3	CARDIAC CONDITIONS CONGENITAL CARDIAC CONDITIONS i. Atrial septal defect, ii. Ventricular septal defect, iii. pulmonary stenosis, iv. Tetralogy of Fallot, v. Patent Ductus Arteriosus, Coarctation of Aorta vi. Transposition of great vessels and A.V. malformation	6
4	ACQUIRED CARDIAC CONDITIONS i. Mitral stenosis, ii. Mitral regurgitation iii. Aortic stenosis & regurgitation iv. Coronary artery disease	6
5	DISEASES AND DISORDERS OF THE HEART : i. Pericarditis ii. Myocarditis iii. Endocarditis iv. Rheumatic Fever v. Ischemic Heart Disease, vi. Cardiac Arrest vii. Hypertension	6
6	RESPIRATORY CONDITIONS Patterns of lung disease – Chronic Obstructive Lung Disease and Restrictive Lung Disease ; i. Definition, Aetiology, Clinical features, signs and symptoms, complications, management and treatment of following lung diseases : Chronic Bronchitis, ii. Emphysema, iii. Asthma, iv. Bronchiectasis, v. Cystic Fibrosis, vi. Upper Respiratory Tract Infections, vii. Pneumonia, viii. Tuberculosis, ix. Fungal Diseases,	6

	x. Interstitial Lung Diseases, xi. Diseases of the pleura, diaphragm and chest wall ; xii. Respiratory failure – Definition, types, causes, clinical features, diagnosis and management.	
7	DISEASE AND DISORDER OF LUNGS Definition, Clinical features, diagnosis and choice of management for the following disorders – chest wall deformities, a) Cervical rib b) Rickets-rickety rosary c) Pigeon chest d) Funnel chest e) Scoliosis f) Kyphosis i. chest wall tumours, ii. Spontaneous Pneumothorax, iii. Pleural Effusion, iv. Empyema Thoracis, v. Lung abscess, vi. Bronchiectasis, Tuberculosis, vii. Bronchogenic Carcinoma, viii. Bronchial Adenomas, ix. Metastatic tumours of the Lung, x. tracheal Stenosis, xi. Congenital tracheomalacia, xii. Neoplasms of the trachea, xiii. Lesions of the Mediastinum. xiv. Carcinoma of the female breast.	6
8	CLINICAL MANIFESTATION CARDIAC SYSTEM i. ECG ii. Exercise Stress Testing iii. Radiology related to heart. RESPIRATORY SYSTEM i. Chest Radiographs ii. Pulmonary Function Testing iii. Arterial Blood Gas Analysis	6
9	Describe the principles of cardio – pulmonary resuscitation: cardiac massage, artificial respiration defibrillators and their use.	3
10	SURGICAL IMPLICATION Outline the extent, use and complication of the following surgical incisions: Antero lateral thoracotomy, postero lateral thoracotomy and median sternotomy.	3
TOTAL TEACHING HOURS		**60 Hrs**

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(Deemed to be University)
No.12, Vembuliamman Koil Street, West K.K.Nagar, Chennai-78.

REFERENCE

1. Beachey, Respiratory care- Anatomy and physiology :foundation, CBS ,3rd ed, 2013.
2. Bhalrao, Essentials of clinical cardiology, Jaypee, 1st ed , 2013
3. Chattergee, Cariology an illustrated Text book , Jaypee,1st ed, 2012.
4. Tiddys physiotherapy by Stuart B Porter.
5. Cash text book of chest heart and vascular disorder for physiotherapist by Patricia Downie

COURSE TITLE: PHYSIOTHERAPY IN WOMEN'S HEALTH

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Physiotherapy in women's health (Core subject)	**120**	**60**	**60**	**04**	**4**	**04**	**2**	**6**

Learning Objectives:

At the end of the course, the candidate should

1. Be able to describe the normal & abnormal physiological events during the Puberty, Pregnancy, Labour, Puerperium, post natal & Pre, Peri & Post Menopause.
2. Be able to discuss common complications during Pregnancy, Labour, Breast feeding, Puerperium & Pre, Peri & Post-Menopausal stage.
3. Various aspects of Urogenital Dysfunction &the management in brief.
4. Acquire the skills of the clinical examination of Pelvic Floor and its Physiotherapeutic management in case of abnormalities.

Course Content				
s no.	Title of content	Hours of teaching/learning		
		Theory	Practical	SPT
1.	**Anatomy** Anatomy of female genital system Anatomy of Pelvic floor muscles-Origin, insertion, nerve supply, actions. Anatomy of abdominal muscles- Origin, insertion, nerve supply, action. Anatomy of breast	5	-	

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2.	**Puberty** Definition Stages Normal and abnormal puberty Physical and Physiological changes Hormonal changes	3	-	
3	**Menstrual disorders** Amenorrhea, Dysmenorrhea, Oligomenorrhea Menorrhagia, Metrorrhagia, menometrorrhagia PT Assessment and management	4	5	3
4	**Pregnancy** Pregnancy and fetal development Normal Gestations Maternal Physiology in Pregnancy • The endocrine system • The reproductive system • Musculoskeletal system • Cardiovascular system • The hematologic system • Respiratory system • Urinary tract • Pregnancy discomfort • Complications during pregnancy **Antenatal** Antenatal care Antenatal screening Preconception care Antenatal classes	10	5	4
5	**Labour** Introduction Stages of labour Complications of labour Interventions in labour Role of Physiotherapy in labour Postnatal assessment and management	5	6	2
6	**Puerperium** Definition Stages Changes of Reproductive system in postpartum period Hormonal changes during postpartum period Postpartum complications	5	4	2

	Overview of contraception Role of physiotherapy in postpartum			
7	**Lactation** Anatomy of breast Hormonal control of breastfeeding Compositions of breastfeeding Positions for successful breastfeeding Common problems during breastfeeding Role of physiotherapy in breastfeeding	3	5	2
8	**Urogenital dysfunctions** Incontinence Prolapse PT Assessment and management	5	6	2
9	**Climacteric** Introduction A etiology Signs and symptoms Postmenopausal problems Clinical management Osteoporosis and PT management	4	5	1
10	**Gynecological conditions** Pelvic inflammatory disease. Fibroid uterus. Gynecological Infections	6	-	-
11	**Obstetrics surgeries & Gynecological surgeries** Caesarean, Oophorectomy, Hysterectomy, D&E, MTP ,Tubectomy & Prevention of thromboembolism PT Assessment and management	4	6	2
12	**Neoplasm** Introduction, Types, etiology, Signs and symptoms Clinical management	2	-	-
13	**Overview of family planning**	2	-	-
14	**Early pediatric problems**	2	-	-
	Total Hours (Theory /Practical / SPT)	**60**	**43**	**17**

Supervised Practical training (SPT) (include practice session, assignment, journal presentation, seminar presentation etc)

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

Reference:

1.Text book of Gynecology- Datta-New central book agency.
2.Text book of Obstetrics- Datta-New central book agency.
3.Physiotherapy in obstetrics and gynecology-Margaret Polden and Jill Mantle.
4.Physiotherapy care for women's health R.Baranitharan,V.Mahalakshmi,V.Kokila.
5.Obstetric and Gynecologic physical therapy-Elaine wilder.
6.Essential exercises for the childbearing year-Elizabeth Noble,PT.

SEMESTER 6

COURSE TITLE: CLINICAL POSTING/PRACTICE

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Clinical posting/practice (clinical rotation CR)	**90**		**90**		**4**		**3**	**3**

Clinical Posting: Our students are posted in various clinical areas/ wards on rotation basis. During clinical posting they are clinically trained to provide Physiotherapy care under supervision. They also trained on patient assessment, performing special test, identifying indications for treatment, ruling out contraindications, bed side approach, decision on treatment parameters, dosage and use of relevant outcome measures under supervision. Evidence based practice will be part of clinical training.

During the clinical practice, student should be able to successfully execute the competencies in assessment, physical diagnosis on ICF basis, plan of care and therapeutic interventions relating to neuromuscular, orthopedic & cardiorespiratory dysfunctions. Student should become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical,

non-surgical, pediatric and geriatric). Student should learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies during the clinical practice and successfully perform on real patients during the final evaluation of the course.

All the clinical training work should be properly documented, signed by respective clinical in-charge, indexed in a separate file and should be submitted before the final exam.

The students should maintain a clinical log book as per the instruction by respective clinical in charge.

SEMESTER 7

Course title : PHYSICAL AND FUNCTIONAL DIAGNOSIS

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Physical and functional diagnosis (Core subject)	**180**	**60**	**120**	**03**	**6**	**4**	**4**	**8**

OBJECTIVES:

At the end of the course, student will be able to:

1. Understand the use of ICF.
2. Acquire the knowledge of human growth and development from new life to birth and adulthood
3. Understand structure and function of nerve and muscle as a base for understanding the electro-diagnostic assessment.
4. Understand the use of appropriate tools or instruments of assessment in Musculoskeletal, Neurological and Cardio-vascular conditions.
5. Understand the theoretical basis and principles of manipulative skills, neuro therapeutic skills and skills of cardiopulmonary care and resuscitation
6. Document results of assessment to evaluate the patient from time to time

COURSE CONTENT		
s. no	Title of content	Hours of teaching/ Learning

		Theory	Practical	SPT*
	SECTION I			
1	Functional Diagnosis using International Classification of Function, Disability & Health (I.C.F.) (Applicable for all the Sections mentioned below)	**2**		
2	SECTION II: MUSCULOSKELETAL EVALUATION AND MANIPULATIVE SKILLS **a. Assessment of Musculoskeletal System**: i. Soft tissue flexibility ii. Joint mobility iii. Muscle strength & Endurance iv. Trick movements v. Sensations, Limb length, Abnormal posture VI. Gait deviations due to musculoskeletal dysfunction	**3**	**3**	**2**

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	b. Assessment of Joints with special tests:	**3**	**8**	**2**

	i. **Cervical Spine**: Foraminal compression, Distraction, Shoulder depression, vertebral artery, Dizziness tests. ii. **Shoulder**: Yergason's, Speed's, Drop-Arm, Supraspinatus Impingement, Anterior & Posterior Apprehension, Allen, Adson. iii. **Elbow**: Cozen's, Mill's, Tinel's sign iv. **Forearm, Wrist & Hand**: Phalen's, Bunnel-Littler, Froment's sign v. **Lumbar Spine**: Schober's, SLR, Prone Knee Bending, Slump. vi. **Sacro Iliac joint**: Faber- Patrick's, Gaenslen, Gillet, March vii. **Hip:** Nelaton's line, Bryant's triangle, Thomas, Ober's, Tripod sign, Trendlenburg sign, viii. **Knee:** Tests for collateral & cruciate ligaments (valgus, varus, Lachman, Lag, Drawer's, McMurray's, Fluctuation, Patellar tap, Q- angle, Clarke'S) ix. **Ankle & Foot**: Anterior Drawer, Talar Tilt, Homan's & Moses (for D.V.T.)			
	c. Response of soft tissues to trauma : i. Trigger points ii. Spasm iii. Ligament Sprains iv. Muscle Strains	**2**	**3**	**1**
	d. Basics in Manual Therapy and Applications with Clinical Reasoning: i. Assessment of Articular and extra-articular soft tissue status a. Contractile tissues	**2**	**3**	**2**

	b. Non contractile tissues ii. Examination of joint integrity a. Accessory movement b. End feel			

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	e. Examination of musculoskeletal Dysfunction : i. Subjective examination ii. Objective examination iii. Special tests iv. Functional Diagnosis using ICF	**3**	**5**	**4**
	f. Assessment of Pain i. Types of pain: Somatic, Somatic referred, Neurogenic, Visceral ii. Subjective Assessment: a. Location, duration, progression, distribution, quality, diurnal variations, modifying factors. modifying factors.	**2**	**4**	**1**

	b. Severity, nature of pain, tissue irritability iii. Objective Measurement & Documentation- a. Visual Analogue Scale (V.A.S) b. Numerical Rating Scale(N.R.S) c. McGill's modified questionnaire(including Body charts)			
	g. Basic principles, indications, contra indications of mobilization skills for joints and Soft tissues: i. Maitland ii. Mulligan iii. Kaltenborn iv. Mckenzie v. Cyriax vi. Myofascial Release Technique vii. Muscle Energy Technique viii. Neural Tissue Mobilization	**4**	**6**	**4**

	(Neuro Dynamic Testing)			

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
3	**SECTION III : CARDIO VASCULAR RESPIRATORY EVALUATION & RELATED SKILLS**			
	a. Assessment of Cardio Vascular &Pulmonary System: i. Vital parameters ii. Chest expansion iii. Symmetry of chest movement v. Breath Holding Test vi. Breath Sounds Breath Sounds Breath Holding Test Breath Sounds Symmetry of chest movement Breath Holding Test Breath Sounds vii. Rate of Perceived Exertion (R.P.E.) Energy Systems & Exercise Physiology – Energy Systems & Exercise Physiology –	**5**	**7**	**3**

	a. Physiological response to immobility and Activity. b. Aerobic & Anaerobic metabolisms b) Aerobic & Anaerobic metabolisms c. Evaluation of Functional Capacity using sub maximal tests (Exercise Tolerance –Walk Test Six Minutes Walk test) d. Theoretical bases of different protocols for maximal exercise testing (e.g.: Bruce Protocol, Modified Bruce protocol, Balke Protocol, Balke) viii. Interpretation of reports – A.B.G., P.F.T.,P.E.F.R., E.C.G.- (Normal & Variations due to Ischemia & Infarction), X-ray Chest, Biochemical Reports ix. Ankle Brachial Index x. Tests for Peripheral Arterial & Venous circulation.			
	b. Examination of Cardiovascular Respiratory Dysfunction i. Subjective examination	**4**	**5**	

	ii. Objective examination iii. Special tests: Exercise Tolerance Testing – 6 Minute Walk Test, Breath Holding Test, P.E.F.R iv. Functional Diagnosis using I.C.F.			

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	c. Assessment of Fitness & Health Screening for risk factors a. Body composition-B.M.I., b. Use of skin fold caliper, c. Girth measurement d Physical fitness: Flexibility, Strength, Endurance, Agility e Physical Activity Readiness Questionnaire f Screening for health and fitness in childhood, adulthood and geriatric group g Quality of life h Principles & components of exercise prescription for healthy	**3**	**3**	**2**
4	**SECTION IV: NEUROTHERAPEUTIC EVALUATION & ELECTRO DIAGNOSIS**			
	a. General principles of Human development & maturation i. Aspects Physical, motor, Sensory, Cognitive & Perceptive, Emotional, Social	**4**	**3**	**2**

	ii. Factors influencing human development & growth: a. Biological b. Environmental inherited iii. Principles of maturation in general & anatomical directional pattern – a. Cephelo – caudal b. Proximo – distal c. Centero – lateral d. Mass to specific pattern e. Gross to fine motor development f. Reflex maturation tests iv. Development in specific fields – Oromotor development, sensory development, neurodevelopment of hand function neurodevelopment of hand function			

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	b. Basics in Neuro Therapeutics Skills & Applications with Clinical reasoning. i. Principles, Technique & Indications for a) Bobath b) Neuro Developmental Technique	**4**	**3**	**2**

	c) Roods Technique d) P.N.F. e) Brunnstrom, f)Techniques of Motor Relearning Program (M.R.P.)			
	c. Assessment of Movement Dysfunction i. Higher functions ii. Cranial nerves iii. Sensations , sensory organization & body image iv. Joint mobility v. Tone vi. Reflexes-Superficial & Deep vii. Voluntary control i. Muscle Strength ix. Co-ordination Balance Endurance	**5**	**7**	**3**

	xi. Trick movements xiii. Limb Length xiv. Posture deviations xv. Gait deviations due to neurological dysfunction xvi. Functional Diagnosis using I.C.F. xvii. Interpretation of Electro diagnostic findings, routine Biochemical investigations			
	d. Electro diagnosis i. Physiology of resting membrane potential, action potential, Propagation of Action Potential ii. Physiology of muscle contraction iii. Motor unit & Recruitment pattern of motor unit – Size principle iv. Therapeutic current –as a tool for electro diagnosis. a. Electrophysiology of muscle & nerve b.Faradic Galvanic Test, Strength Duration Curve-tests should be carried out on relevant patients,	**6**	**6**	**4**

	c.Test for Sensory & Pain Threshold/Pain Tolerance – technique only			

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	v. Electro-Myography a. Definition Instrumentation – Basic components like C.R.O., Filter, Amplifier & Preamplifier, and Types of Electrode b) Normal & Abnormal E.M.G. pattern i. at rest ii. on minimal contraction iii.on maximal contraction c) Nerve Conduction Studies i. Principles & Technique ii. F wave iii. H reflex			
	d. SCALES: Berg Balance, Modified Ashworth, F.I.M., Barthel Index, G.C.S., D.G.I., M.M.S.,S.T.R.E.A.M. & A.S.I.A.	**2**	**2**	
	DOCUMENTATION: **A** Documentation & Interpretation of following investigations: i. Electro diagnosis : <u>2 each</u> a) S.D.C.	**3**	**6**	**4**

	b) Faradic Galvanic Test c) E.M.G. & N.C. Studies ii. Cardio Vascular & Pulmonary: (1 each) – A.B.G., P.F.T., E.C.G., X-ray Chest, Exercise Tolerance Test. iii. Neurological Scales (1 each)– Modified Ashworth, Berg's Balance, D.G.I., Glasgow coma iv. Barthel Index, F.I.M.			

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	B. Case presentation with Functional diagnosis : Total 12 cases iii. Three cases each in – a. Musculoskeletal b. Neurological ci. Cardiovascular & Respiratory (Including General Medical & Surgical Cases) d. General & Community Health (Including Fitness & Health, Women & Child Health, Occupation Health)	**3**	**8**	**2**
	Total Hours (Theory /Practical / SPT)=180 hrs	**60**	**82**	**38 hrs**

SPT : Supervised Practical training* (include practice session, assignment, journal presentation, seminar presentation etc)

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

REFERENCE

1. Orthopedic Physical Examination –Magee
2. Clinical Electromyography – Mishra
3. Physical Rehabilitation, Assessment and treatment - Susan B O's Sullivan
4. Neurological Examination - John Patten
5. Maitland's book on Manual therapy,

6. Mobilization of Extremities – Kaltenborn
7. Clinical Electromyography – Kimura
8. NAGS, SNAGS and MWMS - Brian Mulligan

COURSE TITLE: REHABILITATION MEDICINE

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course	Course title	Hours per semester			Hours/week		Credits		Total
		Total	L	P	L	P	L	P	

No									credits
	Rehabilitation medicine (Core subject)	**60**	**60**		**03**		**4**		**4**

COURSE DESCRIPTION

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

COURSE OBJECTIVES

The objective of this course is that after 60 hours of lectures and demonstrations in addition to clinical the student will be able to demonstrate concept of team approach in Rehabilitation, identification of residual potential in patient with partial or total disability.

COURSE CONTENT

S. No	Title of content	Hours of teaching/ Learning		
	UNIT I	Theory	Practical	SPT*
1.	**Introduction** • Define the term rehabilitation. Explain its aims and principles. • Discuss the team work involved in rehabilitation, explaining briefly the role of each team member.	**01**		
	Therapeutic techniques • Explain the principles and mechanism of therapeutic techniques with relevant precaution and contraindication. 1. Joint mobilization 2. Reducing spasm 3. Assisting weak muscles 4. Increasing endurance 5.Muscle re-education following muscle transfer surgery 6 Strengthening muscles 7. Increasing co-ordination 8. Improving balance 9. Gait training	**07**		
	Pain • Describe the theories of pain and discuss therapeutic management of pain using	**4**		

	various modalities. • Define myofascial pain syndrome and outline the management. **Disability evaluation** Outline the principles of disability evaluation and discuss its use.	3		
	UNIT II	**15**		
2.	**ORTHOTICS** • Terminology and types of orthoses Indication. Contra indications, Principle of Orthosis, Biomechanical and Anatomic Considerations, Prescription of Orthosis, PT management. **Lower extremity orthoses** • Shoes • Foot Orthoses • Ankle-Foot Orthoses • Knee-Ankle-Foot Orthoses • Hip-Knee-Ankle-Foot Orthoses • Trunk-Hip-Knee-Ankle-Foot Orthoses • Orthotic Options for Patients with Paraplegia **Trunk orthoses** • Corsets • Rigid Orthoses • Cervical Orthoses • Scoliosis Orthoses **Orthotic maintenance** • Shoes • Shells, Bands, and Straps • Uprights • Joints and Locks **Physical therapy management** • Preorthotic Examination • Orthotic Prescription • Orthotic Examination • Facilitating Orthotic Acceptance • Orthotic Instruction and Training • Final Examination and Follow-up Care • Functional Capacities • Paraplegia • Hemiplegia **PROSTHESIS** **Lower Limb Prosthesis** • Terminology and types of Prosthesis • Indication. Contra indications, Prescription of Prosthesis, PT management	01 03 02 01		

	Partial foot and Syme's prostheses **Transtibial prostheses** • Foot-Ankle Assemblies • Rotators and Shock Absorbers • Shank • Socket • Suspension **Transfemoral prostheses** • Foot-Ankle Assemblies and • Shanks • Knee Units • Sockets • Suspensions **Disarticulation prostheses** • Knee Disarticulation Prostheses • Hip Disarticulation Prostheses **Bilateral prostheses** • Bilateral Syme's and Transtibial Prostheses • Bilateral Transfemoral Prostheses **Prosthetic maintenance** • Foot-Ankle Assemblies • Shanks • Knee Units • Sockets and Suspensions **Physical therapy management** • Preprescription • Considerations • Physical Examination • Psychosocial Considerations • Temporary Prostheses • Prosthetic Prescription • Prosthetic Examination/Evaluation • Facilitating Prosthetic Acceptance • Prosthetic Training • Final Evaluation and • Follow-up Care • Functional Capacities **Upper Limb Prosthesis** • Types, Parts, Indications, Contraindications, Evaluation and PT management of upper limb prosthesis	05 03		

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT
3.	**UNIT III**	**15**		
	Mobility aids • Explain about the various types of mobility aids and their functions. Wheelchair, walker, crutch, cane • Definition • Epidemiology • Assessment and Evaluation • Treatment • Examination History Taking Overview: Tests and Measures **Seating principles** Principle 1: Stabilize Proximally to Promote Improved Distal Mobility and Function Principle 2: Achieve and Maintain Pelvic Alignment Principle 3: Facilitate Optimal Postural Alignment in all Body Segments, Accommodating for Impairments in Range of Motion Principle 4: Limit Abnormal Movement and Improve Function Principle 5: Provide the Minimum Support Necessary to Achieve Anticipated Goals and Expected Outcomes Principle 6: Provide Comfort **Wheelchair Prescription** Function and Posture in Existing Equipment Mat Table Measures Seated Examination Wheelchair Testing **Intervention** Problem Solving Model Postural Support System The Wheeled Mobility Base Seating System Features Standers Power Assist Wheels Specific Wheelchair Frame Feature	**06**		
	Evaluation of physical dysfunction Demonstrate methods of evaluation for physical dysfunction and management of disabilities for 1. spinal cord injury 2. Stroke 3. Cerebral palsy 4. arthritis 5. Muscular dystrophy	**09**		

	6. Hansen disease 7. peripheral nerve lesion 8. Fracture 9. Cardio –respiratory dysfunction			
4.	**UNIT IV**	**15**		
	Architectural barriers Describe architectural barriers and possible modifications with reference to RA, CVA, SCI and other disabling conditions. . **Communication problems** Identify communication problems, classify these and outline principles of treatment. **Behavioral problems** Identify behavioral problems in the disabled and outline the principles of management. **Pre – vocational evaluation** Discuss methods and term involved in pre-vocational evaluation and training. **Social implications** Outline the social implications of disability for the individual and for the community. **Community based rehabilitation** Describe a CBR module and compare this with an institutional based rehabilitation system	02 04 02 02 03 03		
	Total Hours (Theory)	**60**	-	-

Text book Reference:

1. Physical text book of rehabilitation-.o'susan o Sullivan
2. Textbook of Rehabilitation medicine by Sundar
3. Handbook of Physical Medicine and Rehabilitation – Susan J.Garrison
4. Braddom's Physical Medicine and Rehabilitation.
5. Orthotics and Prosthetics in Rehabilitation- Michelle M.Lusardi

COURSE TITLE: COMMUNITY MEDICINE AND COMMUNITY PHYSIOTHERAPY

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Community medicine and Community Physiotherapy (Core subject)	**60**	**60**		**03**		**4**		**4**

Learning Objectives

At the end of the course the student will be able to Understand

- Fundamental concept of health & disease, epidemiological effects, socio economical and cultural issues in community medicine
- Explain the importance of family planning, immunization programme and other important national health schemes.
- Know The basic concepts about health, disease and physical fitness.
- Physiology of aging process and influence of aging on physical fitness.
- National policies for the rehabilitation of disabled and the role of Physiotherapist.
- Learn how to evaluate persons with disability and plan for the prevention and rehabilitation
- Have knowledge about occupation hazards, Health education and waste management

sl.no	Topic	Hrs of	Teaching
		Theory	Practical
I	**FUNDAMENTALS OF COMMUNITY MEDICINE**		-
1.	Definitions: National & International, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health Natural history of diseases and the influence of social and economic and cultural aspects of health and diseases.	2	

2.	National care delivery system and the public health administration system at the central and state government level	2	
3.	Selective national health schemes. – Nutritional problems in public health – Community nutrition programmes – Vector borne disease control programme – National leprosy eradication programme – National tuberculosis programme, – National AIDS control programme, – National programme for control of blindness – Iodine deficiency disorders (IDD) programme, – Universal Immunization programme – Reproductive and child health programme – National cancer control programme – National mental health programme – National programme for control of blindness – National programme for prevention and control of deafness – – National diabetes control programme – National family welfare programme – National sanitation and water supply programme, – Minimum needs programme	8	
4.	Employees state insurance scheme and its benefits. Social security measures for protection from occupational hazards, accidents, diseases, and workman's compensation act. Objectives and strategies of the national family welfare programme.	4	
II	**HEALTH EDUCATION**		
5.	Concepts, aims and objectives Approaches to health education Models and Contents of health education Principles of health education, methods of communication, role of health education in rehabilitation service. Role of community leaders and health professionals in health education.	4	
	COMMUNITY BASED REHABILITATION		
6.	i. Urban area e.g. UHC, community centre, clubs, mahila mandals, Social centers, Schools, industries, sports centers. ii. Rural area- by using PHC / rural hospital, district hospital infrastructure.	3	

7.	Community based rehabilitation and institution based rehabilitation. Describe the advantages and disadvantages of the institution based and community based rehabilitation.	2	
III	**HEALTH PROMOTION**		
8.	W.H.O. definition of health and disease. Health Delivery System – 3 tier	2	
9.	Physical Fitness: definition and evaluation related to: I. Effect in Growing Age ii. Effect in Obesity iii. Physical Fitness in women - Pregnancy, Menopause, Osteoporosis iv. Physiology of Aging – Related to Physiological changes in Aging.	2	
10.	Assessment of Fitness	1	
11.	Outline the various measures of prevention and methods of intervention-especially for the diseases with disability.	2	
12.	Preventive Measures in all the above groups of community with their related complications of physiological changes, growth, degenerative changes and lifestyle diseases. Role of international health agencies in rehabilitation of the disabled.	3	
IV	**WOMEN'S HEALTH**		
13.	a. Women in India b. Social issue having impact on physical Function. c. Legal rights and benefits related to health. d. Anatomical & Physiological variations associated with pregnancy &menopause. e. Antenatal, post natal care, advice on labour positions, pain relief f.Urogenital dysfunction	3	
V	**GERIATRICS**		
14.	a. Senior citizens in India b. NGOs and Health related Legal rights and benefits for the elderly. Institutionalized & Community dwelling elders c. theories of Aging	3	
VI	**INDUSTRIAL HEALTH**		
15.	Define occupational health and list methods of prevention of occupational hazards.	2	
16.	a. Introduction to Industrial Health: Definition, Model of Industrial Therapy (Traditional Medical & Industrial Model)	3	
17.	b. Worker Care Spectrum: i. Ability Management –	2	

	Job analysis:- Job description, Job demand Analysis, Task Analysis, Ergonomics Evaluation, Injury Prevention, Employee Fitness Program.		
18.	ii. Disability Management: - Acute care, Concept of Functional Capacity assessment ,Work Conditioning, Work Hardening	2	
19.	iii. Environmental stress in the industrial area– accidents due to a) Physical agents e.g. heat/cold, light, noise, vibration, UV radiation, ionizing radiation. b) Chemical agents- inhalation, local action and ingestion. c) Mechanical	2	
20.	iv. Mechanical stresses: a) Sedentary table work-executives clerk. b) Inappropriate seating arrangement-vehicle drivers. c) Constant standing- watchman, defence forces, surgeons. d) Over execution in labourers -stress management. e) Psychological hazards e.g. monotonicity and dissatisfaction in job, anxiety of work completion with quality	4	
21.	Role of Physiotherapist in industrial set up and stress management relaxation modes and ergonomics.	2	
VII	**HOSPITAL WASTE MANAGEMENT**		
22.	Sources of hospital waste, Health hazards, Waste management	2	
23.	**Total Hours (Theory)**	**60**	

References

1. Text book of Work Physiology - Astrand P A Rodahe K
2. Essential of community physiotherapy and ethics by Rajendra Rajput
3. Therapeutic Exercise – By Kisner & Colby.
4. Text book of community medicine &Community Health – by Bhaskar Rao.
5. Geriatrics Physiotherapy – By Andrew Guccione.
6. Industrial Therapy – by Glenda Key
7. Preventive & Social Medicine –by Park
8. Physiotherapy in Obstetrics and Gynaecology 2nd Edition by Jill Mental (Elsevier)
9. Textbook of Rehabilitation - Sundar

SEMESTER 7

COURSE TITLE: CLINICAL POSTING/PRACTICE

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Clinical posting/practice (clinical rotation CR)	**90**		**90**		**4**		**3**	**3**

Clinical Posting: Our students are posted in various clinical areas/ wards on rotation basis. During clinical posting they are clinically trained to provide Physiotherapy care under supervision. They also trained on patient assessment, performing special test, identifying indications for treatment, ruling out contraindications, bed side approach, decision on treatment parameters, dosage and use of relevant outcome measures under supervision. Evidence based practice will be part of clinical training.

During the clinical practice, student should be able to successfully execute the competencies in assessment, physical diagnosis on ICF basis, plan of care and therapeutic interventions relating to neuromuscular, orthopedic & cardiorespiratory dysfunctions. Student should become familiar with performance of these skills in all

settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, pediatric and geriatric). Student should learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies during the clinical practice and successfully perform on real patients during the final evaluation of the course.

All the clinical training work should be properly documented, signed by respective clinical in-charge, indexed in a separate file and should be submitted before the final exam.

The students should maintain a clinical log book as per the instruction by respective clinical in charge.

SEMESTER 8

Course title: PHYSIOTHERAPY IN ORTHOPAEDIC AND TRAUMATOLOGY CONDITION

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Physiotherapy in orthopedic and traumatology condition (Core subject)	**180**	**60**	**120**	**03**	**6**	**4**	**4**	**8**

A. COURSE DESCRIPTION

This course serves to integrate the knowledge gained by the students in clinical orthopedics with the skills gained in exercise therapy, electrotherapy and massage, thus enabling them to apply these in clinical situations of dysfunction due to the musculoskeletal pathology.

B. COURSE OBJECTIVES

The objective of this course is that after 180 hours of lectures & demonstrations, practical and clinics, the student will be able to identify disability due to musculoskeletal dysfunction, set treatment goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situation to restore musculoskeletal function.

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

COURSE CONTENT				
s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
1	PT ASSESSMENT FOR ORTHOPEDIC CONDITIONS	**5**	**5**	**5**
	SOAP format. Subjective - history taking, informed consent, personal, past, medical and socioeconomic history, chief complaints, history of present illness. Pain assessment- intensity, character, aggravating and relieving factors, site and location. Objective- on observation - body built swelling, muscle atrophy, deformities, posture and gait. On palpation- tenderness-grades, muscle spasm, swelling-methods of swelling assessment, bony prominences, soft tissue texture and integrity, warmth and vasomotor disturbances. On examination –ROM – active and passive, resisted isometric tests, limb length-apparent, true and segmental, girth measurement, muscle length testing-tightness, Contracture and flexibility, manual muscle testing, peripheral neurological examination dermatomes, myotomes and reflexes, special tests and functional tests. Prescription of home program. Documentation of case records, and follows up.			

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
2	Describe the PT assessment of a patient with a fracture during the immobilization and post immobilization periods.	**2**	**3**	**2**
3	List the aims of PT management in a patient with a fracture.	**2**	**2**	**2**
4	Review manual, mechanical skin, skeletal, lumbar and cervical traction	**2**	**2**	**2**
5	Describe the methods of mobilization of a patient /extremity after healing of a fracture	**3**	**2**	**1**
6	Review the mechanism of injury. Clinical features, treatment and complications and describe the PT management and home programme for the following	**4**		

	injuries: Fracture clavicle, upper 1/3 of humerus, Fracture head of radius, olecranon process, shaft of radius and ulna, colles Fracture scaphoid, Bennett's and metacarpal neck Fracture proximal tibia, both bones of leg, Pott's fracture and Dupetrens contracture, calcaneum and meta tarsal (march) Dislocation of (a) hip (congenital), traumatic posterior & central (b) shoulder- anterior & recurrent (c) patella.		**4**	**2**
7	Describe briefly the general and PT assessment of the vertebral column: Subjective evaluation: occupation, symptoms etc Objective evaluation : Observation- body type, musculature, deformity Palpation- temperature, swelling, bony prominence, tenderness and Postural evaluation using a plumb line Active movement: the vertebral column- flexion, extension, lateral flexion& rotation. Specific tests- straight leg raising, prone knee bend, passive neck flexion Kernig's sign. Proximal joints of pelvic & shoulder girdles Neurological tests, muscle strength, sensation and reflexes	**4**	**5**	**2**

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
8	Review cervical and lumbar spondylosis, spondylolisthesis, TB spine and spinal fracture. Outline PT assessment, PT aims and management and detailed home programme.	**3**	**3**	**2**
9	List the common postural abnormalities affecting the spine. Review kyphosis, lordosis and scoliosis; Outline PT assessment, PT aims and management along with home programme.	**3**	**3**	**2**
10	Review the clinical features and describe the PT management of Ankylosing spondylitis	**2**	**2**	**1**
11	Intervertebral disc prolapse: review basic anatomy and biomechanics of the spine. Review causes, sign, symptom and investigations done for IVDP. Review	**2**	**2**	**1**

	the different types and degrees of IVDP. List the PT aims and demonstrate the treatment techniques.			
12	Review the clinical features and describe the PT assessment and management of hand lesions and surgery	**2**	**2**	**1**
13	Define the following terms ,review their PT assessment, aetiology & clinical features and describe their treatment: Strain, sprain (medial ligament of knee, and lateral ligament of ankle), bursitis (subacromial & pre patellar) synovitis, tendonitis, tenosynovitis, fibrositis, fibro myositis, rupture and avulsion of tendons (tendoachilles&quadriceps) tennis elbow, torticollis, tendonitis (supraspinatus & biceps), periarthritis shoulder and shoulder hand syndrome.	**3**	**3**	**2**
14	Review upper & lower limb and spinal orthosis and prosthesis. Describe the principles and function of each list indications and contra- indications, advantages and disadvantages of each. Demonstrate the fabrication of simple hand and foot splints out of POP.	**3**	**3**	**2**

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
15	Review the indications and principles of amputations of the upper and lower limbs and describe the PT management and training of amputees before and after prosthetic fitting. Review immediate post- operative prosthetic fitting and list its advantage.	**3**	**4**	**2**
16	Define poliomyelitis and review the aetiology, clinical features , staging and medical management. Outline the PT assessment during the acute, sub acute and chronic stages. Describe the PT aims and demonstrate treatment techniques. List the common deformities seen in polio and methods of preventing them. Review common reconstructive tendon transfer operations in polio and its PT management. Review the common orthoses used, and describe the technique of measurement for a KAFO and check out along with detailed home programme including care of the	**3**	**3**	**2**

	orthosis.			
17	Define cerebral palsy. Review its causes, signs, symptoms, classification and common deformities. Outline PT assessment, PT aims and management alone with home programme. Review common surgical correction and its PT management.	**3**	**3**	**2**
18	Define rheumatoid arthritis. Review its signs, symptoms and radiological features, pathology, common deformities, medical and surgical management. Describe the PT assessment, aim and management in the acute and chronic stage and detailed home programme.	**2**	**2**	**1**
19	Define osteoarthritis. Review its signs, symptoms and radiological features, pathology, common deformities, medical and surgical management. Describe the PT assessment, aims and management and detailed home programme with special emphasis on osteoarthritis of hip, knee & ankle	**2**	**2**	**1**

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
20	Define leprosy. Review the incidence and mode of transmission of leprosy. Review the clinical features, common deformities and medical management. Review the tendon transfer operations and describe the PT management before and following transfers. Describe the risk of anaesthetic limbs and outline its care to prevent complications. Review the planter ulcer in leprosy and its management (including foot wear).	**2**	**2**	**2**
21	Describe the different degrees of burns and review relevant first aid measures. Outline the PT assessment of burns as follows: degree and percentage of burns, presence of oedema and adherent skin, ROM of involved joints, muscle power, contractures, deformities, and altered posture and chest movements. Review medical and surgical management including skin grafting. Describe the PT aims and management of a patient with burns along with home programme.	**2**	**3**	**2**

22	THERAPEUTIC TECHNIQUES - Explain the theory and mechanism of therapeutic techniques and relevant precautions, for the following: Joint mobilization, Reducing spasm, Assisting weak muscles, Increasing endurance, Muscle re -education following muscle transfer surgery, Strengthening muscles, Increasing co-ordination, Improving balance, Gait training	**2**	**3**	**2**
23	ORTHOTIC DEVICES Explain the principles involved in prescribing orthotic devices for different parts of body. Outline the purpose of each type and list major indications and Contra-indications and demonstrate methods of training in their use.	**2**	**3**	**2**

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
24	PROSTHETIC DEVICES Describe types of artificial limbs and their functions. Demonstrate methods of training in their use.	**2**	**3**	**2**
25	PRINCIPLES OF VARIOUS MANUAL THERAPY APPROCH – Maitland, Mckenzie, Cyriax	**2**	**4**	**2**
	Total Hours (Theory /Practical / SPT)= 180	**60**	**73**	**47**

Supervised Practical training (SPT) (include practice session, assignment, journal presentation, seminar presentation etc)

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

REFERENCE

1. Essential of orthopedics for physiotherapist by Ebnezar
2. Essential orthopedics by J. Maheshwari
3. Orthopedic physical assessment by David J. Magee.
4. Essential of orthopedics and applied physiotherapy be Jayanth Joshi

COURSE TITLE: PHYSIOTHERAPY IN CARDIO – RESPIRATORY CONDITIONS

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Physiotherapy in cardio – respiratory conditions (Core subject)	**180**	**60**	**120**	**03**	**6**	**4**	**4**	**8**

Learning Objectives:
At the end of the course,

1. The students will portray the in-depth assessment knowledge in heart and lungs.
2. The student will be able to understand the clinical conditions with the proper demonstration physiotherapy approaches.
3. The Student will be able to extract the clinical findings with the proper assessment and plan of management.
4. The proper utilization of different tools of physiotherapy to improve the functional status of the individual.
5. Incorporate the therapeutic aspects of cardio respiratory technique as a baseline requirement for the physiotherapy approach.

s. no	TITLE OF CONTENT	Theory	Practical	SPT*
1.	ANATOMY Review the regional anatomy of thorax; upper respiratory tract – trachea and bronchial tree; lungs and bronchopulmonary segment: muscles of respiration: heart and great vessels: Movements of the chest wall and surface anatomy of lung and heart	5	1	5
2.	PHYSIOLOGY Review the mechanics of respiration inspiration & expiration, lung volumes, respiratory muscles,	5	1	5

	compliance of lung and chest wall, work of breathing, dead space gas exchange on lung and pulmonary circulation			
3.	GENERAL OVERVIEW - ASSESSMENT ADULT/ PEDIATRIC Describe physical assessment in cardio respiratory dysfunction: inspection: Posture (recumbent, erect,): breathing pattern (rate, rhythm, use of accessory muscles): Chest movement (Symmetry, intercostals and diaphragmatic components) Chest deformity (Barrel chest, Pigeon chest): spinal deformity (scoliosis, kyphosis, kyphoscoliosis), Sputum (colour, type, volume consistency),Cough (types productive / non-productive, presence of a normal cough reflex).Palpation: Tactile and vocal fremitus, mobility of thoracic spine and rib cage. Percussion: dullness and hyper resonance. Auscultation: Normal and abnormal breath sounds. Measurement: Chest expansion at different levels (axillary), nipple, xiphoid); exercise tolerance (six minute walking test) Post – operative range of motion and muscle assessment	5	4	6
4.	GENERAL OVERVIEW - PHYSICAL TREATMENT FOR ADULT AND PEDIATRIC Describe indication, goals and procedure of breathing exercises, Describe Diaphragmatic breathing, localized basal expansion, apical expansion, specific segmental exercise raising the resting respiratory level. Describe chest mobilization exercises. Describe relaxation positions for the breathless patient – high side lying forward lean sitting, relaxed sitting, forward lean standing, relaxed standing. Describe controlled breathing during walking and during functional activity. Describe exercise for the breathless patient: exercise tolerance testing and exercise programme. Describe the technique, vibratory chest shaking and percussion. Describe technique of Postural drainage, including indications, general precautions and Contra-indications, preparation drainage of individual bronchopulmonary segments, modified postural drainage and continuing postural drainage as a home programme. Outline the history of mechanical respiration, Define	10	10	14

	the following terms a) Respiratory b) lung ventilator c) resuscitators d) bird ventilator e) IPPB f) PEEP g) CPAP h) SIMV i) PEEP. Classify ventilators by third cycling control (volume cycling, pressure cycling, time cycling and mixed cycling). Describe the principles of operation of commonly used ventilators and outline the use of the following types: i) Bear ii) Bennett iii) Emerson iv) Bird. Outline the principles of Aerosol Therapy. Describe the physical properties of aerosol and their deposition in the alveoli Describe the principles of nebulizers. d Outline the principles of humidification therapy and methods of correcting humidity deficits. Describe the principles of operation of pass- over humidifiers and bubble- diffusion humidifiers. Describe techniques of sterile nasopharyngeal and endotracheal suctioning.			
5.	PHYSIOTHEARPY IN OBSTRUCTIVE LUNG DISEASES Assess: effort of breathing, extent of weeks, pattern of breathing, sputum production, chest deformity, exercise tolerance (patients efforts tolerance). Identify problems: decreased outflow due to bronchospasm anxiety due to difficulty in ventilation, exhaustion due to increased work of disturbed breathing, increased secretions which are difficult to remove, decreased exercise tolerance. Demonstrate treatment techniques: relaxation postures and techniques, reassurance and education about disease, controlled breathing, breathing exercise , postural drainage , vibratory shaking, huffing and coughing, graduated exercise programme and posture correction.	4	3	7
6.	PHYSIOTHERAPY IN RESTRICTIVE LUNG DISORDERS Assess: chest expansion at different levels, mobility of thorax and spine, posture (kyphosis, scoliosis) and tests for exercise tolerance (six minute walking test) Identify problems: decreased expansion of lung due to restriction of chest wall movement causing decreased ventilation, defective posture and decreased exercise tolerance. Demonstrate the treatment techniques. Vigorous mobilizing exercise	4	3	7

	to thorax and spine, breathing exercise to increase ventilation and drain secretions, exercises for posture correction, graduated exercises to increase tolerance.			
7.	PHYSIOTHERAPY IN CHEST INFECTIONS Assess: sputum, cough, fever and dyspnoea. Identify problems: productive cough with risk of haemoptysis, exhaustion due to increased work of breathing, chest deformity, and decreased exercise tolerance. Demonstrate treatment techniques: postural drainage with use of adjuncts, percussion, vibration, huffing and coughing to expectorate mobilizing exercises to thorax and graduated exercises.	4	3	5
8.	PRINCIPLES OF INTENSIVE CARE PHYSIOTHERAPY Describe the principles of intensive care therapy. Demonstrate knowledge of the following equipment: Endo tracheal tubes, tracheal tubes, humidifier, and ventilators. High frequency ventilators. Differential ventilators, CPAP masks, suction pump, electrocardiogram, pressure monitors – arterial, central venous, pulmonary artery, and pulmonary wedge: intra cranial and temperature monitors. Assess: special instructions pertaining to any operation performed, respiration, level of consciousness, colour blood pressure, pulse temperature, sputum, expectorated (colour and quantity), drugs (time last dose of analgesic given), drains, presence of pace maker or intra-aortic balloon pump, ECG and blood gas results, size of heart , presence of secretions and placement of chest tubes	6	3	7
9.	PHYSIOTHERAPY AFTER PULMONARY SURGERY Pre operative: demonstrate treatment techniques: explanation to patient, care of incision, mechanical ventilation, breathing exercise, huffing and coughing, mobilizing exercise, posture correction, graduated exercise programme. Post operative : assess : special instructions pertaining to operative procedure performed, breath sounds , cyanosis, respiratory rate , temperature and pulse, blood pressure, drainage from pleural drain(pudding or swinging), sputum expectorated, analgesia, movements of chest wall (symmetry) position of the patient and effort of breathing, chest radiograph and blood gases.	5	3	7

	Identify problems: pain intercostal drains in situ, decreased air entry, retained secretions, decreased movement of the shoulder of affected side, decreased mobility and poor posture. Demonstrate treatment techniques: deep breathing and segmental breathing exercises, vibrations, percussions, huffing and coughing, full range active assisted arm exercises, ankle foot exercises, trunk exercises, posture correction, positioning of patient IPPB and inhalations.			
10.	PHYSIOTHERAPY AFTER CARDIAC SURGERY Pre operative: Assess patients medical history, normal breathing pattern of patient, pulse, respiratory rate, BP, thoracic mobility, posture and patients exercises tolerance. Identify problems: excess secretions, decreased mobility of thorax, defective posture, and decreased exercise tolerance. Demonstrate treatment techniques: Explain to the patients about their operation and incision, ICU, endotracheal tube, central lines, naso gastric tube, ECG leads , drains, peripheral lines , temperature probe, etc. teach breathing exercises , splinting of incision, huffing and coughing, correct posture, range of motion exercises to trunk and shoulders, active exercise to ankle and foot. Post operative: assess, special instructions pertaining to operative procedure performed, type of incision, blood pressure, pulse rate, respiration, colour, time of last analgesic dose, drains, temperature , ECG, Chest x-ray and blood gases. Identify problems: pain decreased air entry, retained secretions, reduced arm and led movements, decreased mobility. Demonstrate treatment techniques: deep breathing exercises, suctioning, active / assisted exercises top arm and leg, graduated exercise programme.	6	3	7
11.	PHYSIOTHERAPY IN GENERAL HISTORY Assess the patients, medical history, past treatment, breathing pattern, ability to cough and pain. Identify problem pain, increased secretions, defective posture and decreased exercise tolerance Demonstrate treatment techniques: Breathing exercise, huffing and coughing, mobilizing exercise, posture correction, graduated exercise programme.	2	3	5

12.	PHYSIOTHERAPY IN REHABILITATION AFTER MYOCARIDAL INFARCTION Describe the role of physiotherapist in a coronary care unit during the first 48 hours. Describe the principles of formulate of an exercise programme. Bed exercise, walking, stair climbing. Describe a home exercise programme and advice on leisure activities. Describe physiotherapy for complication after myocardial infarction: chest infections, cerebral embolism and shoulder hand syndrome	3	3	5
	TOTAL HOURS (Theory, Practical & SPT)=180	**60**	**40**	**80**

Supervised Practical training (SPT) (include practice session, assignment, journal presentation, seminar presentation etc)

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

REFERENCE

1. Cash's text book of chest heart and vascular disorder for physiotherapist by Patricia Downie.
2. Tidy's physiotherapy by Stuart B. Porter.

COURSE TITLE: PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Physiotherapy in Neurological conditions (Core subject)	**180**	**60**	**120**	**03**	**6**	**4**	**4**	**8**

COURSE OBJECTIVES

The objective of this course is that after 180 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 skills in exercise therapy, electrotherapy and massage in clinical situation to restore neurological function.

s no	Title of content	Hrs of teaching		
		Theory	Practical	SPT*
1.	Tonal regulation	2 Hrs	-	1 Hr

2.	2. PRINCIPLES OF ASSESSMENT Skill in history taking Assessment of higher functions, cortical sensations, cranial nerves, dorsal column sensation and pain & temperature sensation Assessment of motor function: grading of muscle power, assessment of range of movement, balance and coordination Assessment of superficial and deep reflexes Assessment of reflex maturation in terms of stimulus, position negative/positive reactions and their significance Assessment of gait – both normal and abnormal (spastic, ataxic and paralytic patterns). Emphasis should be placed on teaching accurate assessment techniques and various recording methods e.g. colour coding on body charts, graphs etc.	8Hrs	8Hrs	3Hrs
3.	PRINCIPLES OF TREATMENT Sensory re – education: hypersensitivity, hyposensitivity and anaesthesia. d Treatment of altered tone: hyper tonicity and hypo tonicity. Motor re-education: strengthening exercise, coordination exercise , joint mobilization exercise , use of equilibrium and labyrinthine systems , use of PNF patterns , controlled sensory stimulation to bias the spindle cells e.g. vibration, tactile, ice etc., use of stretch to elicit movement (facilitation), light joint compression (inhibition), use of reflex activity to improve motor function, phylogenic sequence of motor behaviour. Treatment to improve function: free exercise, gait training with or without aids, activities of daily living, mat exercise, exercises for recreation. Review the use of ambulatory aids in neurological conditions: in spastic upper motor neuron lesions, in lower motor lesions, in dorsal column dysfunction and cerebral dysfunction. Review the use of splints and braces in spastic upper motor neuron and in flaccid lower motor neuron lesions, in both upper and lower limbs. Review the management of chronic pain in neurological conditions with respect to the type of pain, treatment modalities available, selection criteria for each modality and possible complications.	10 Hrs	10 Hrs	3Hrs

4.	PERIPHERAL NERVE LESIONS Anatomy of peripheral Nerves, Identify the types of peripheral nerve lesions. Assess the motor system: specific muscles, range of motion, active and passive ranges, muscle girth. Assess sensory system: touch, pain, temperature, par aesthesia, nerve reverberation. Assess autonomic function: sweating, skin condition, soft tissue atrophy. Treatment - Describe muscle re-education techniques: electrical stimulation (selection of current): active, assisted, resisted movements, passive and self assistive stretching and massage. Describe sensory re education and pain relief by various modalities. Describe the common splints used in peripheral nerve lesions- static, dynamic and functions: isolating muscle contraction, specific muscle strengthening. Post operative management: pressure bandaging and muscle re education after transfer. Describe a home programme.	4 Hrs	8 Hrs	3 Hrs
5.	MUSCULAR DYSTROPHY Muscular Anatomy, Physiology Describe stages of the disease: ambulatory, wheel chair and bed stages. Describe significance of exercises: resisted, active, free. Identify and assess common contractures and deformities. Assess range of motion and muscle power. Assess functional ability. Demonstrate the treatment programme for strengthening weak muscles: active movements and hydrotherapy. Increase range of motion by suspension therapy, power board, passive stretching, positioning etc. demonstrates gait training with appropriate orthosis. Describe management of chest complications: breathing exercises, chest percussion, drainage of secretions and assisted coughing.	3 Hrs	3Hrs	3 Hrs
6.	PARKINSONISM Anatomy of Basal ganglia Review the natural history, course, and	4Hrs	7 Hrs	3 Hrs

	prognosis of the disease, identify and assess problems in posture, sitting, kneeling and standing balance, voluntary and autonomic movements, rigid, tremor and gait. Assess also hearing, speech and finger dexterity. Describe disability grading according to Yulu. Demonstrate treatment: postural awareness and relaxation training, gait training techniques, associated reaction, heel-toe gait, overcoming obstacles, start and stop on command, turning and walking backwards, forwards and side wards. Describe an appropriate home exercise programme.			
7.	SPINAL CORD LESIONS Anatomy of spinal cord,tracts, Describe types of spinal cord lesions. Describe signs of tract and root interruptions. Describe positioning of the patient in acute spinal cord injury. Describe assessment of the motor system: tone, power of specific muscles, and range of motion and limb girth. Describe assessment of sensory system and reflexes. Describe the assessment of functional ability and balance reactions in appropriate cases. Describe assessment of respiratory function. Muscles of respiration, coughing ability and vital capacity. Describe how the level of lesion is ascertained. Treatment – Describe the stages of immobilization and stage when weight bearing is allowed. Describe spinal orthoses. Demonstrate motor re education programmes and programme for respiratory care in high level paraplegics and quadriplegics. Demonstrate progressive amputation, mat exercise, variou8s strengthening programmes, methods of decreasing spasticity and improving sitting balance. Demonstrate paraplegic gaits and re education in functional activities: transfers and protective falling. Describe common ambulatory aids used in paraplegics and common splints used in tetraplegics. Describe the concept of team approach in rehabilitation of these patients.	4 Hrs	8 Hrs	3 Hrs
8.	HEMIPLEGIA Circle of Willis Define hemiplegia and identify the following: sensory disturbance, alteration in tone, loss of selective movement, loss of balance reactions and Communication problems.	4 Hrs	8 Hrs	3Hrs

	Treatment - Describe the unilateral and bilateral approaches to treatment. Describe the positioning in the supine position, on the affected and on the un affected sides. Demonstrate activities in the recumbent position: arm mobilization. Trunk elongation. Scapular movement, arm elevation, activities for recovering arm, activities for the lower limb i.e. hip and knee flexion over the side of the bed, knee extension with dorsiflexion, hip control, isolated knee extension. Mat activities: Demonstrate rolling on the affected and unaffected sides, sitting and kneeling. Describe the technique of making a patient sit passively and active assisted n sitting, demonstrate transfer technique. Describe activities in sitting: equal weight transferee on both buttocks shuffling on buttocks, weight transfer through arms balance reactions of trunk- head. Demonstrate activities in standing : standing for plinth, from chair (assisted and independent), weight bearing on affected leg, knee control in standing weight transfers forward, back ward and side wards, gait training and stair climbing. Describe atilt board activities in the lying and sitting positions. Describe additional methods of stimulation using verbal cues, ice, pressure & tapping. Describe management of shoulder pain and shoulder hand syndrome. Identify and describe hemiplegic gait, identify synergy components and abnormal reflex activities. Demonstrate re education of gait: motor relearning techniques functional approach and use of orthosis			
9.	CEREBELLAR LESIONS Anatomy of cerebellum, Identify and assess abnormal tone, decomposition of movement, rapid alternate movements, pleurosthotonus, proprioception, dysmetria, posture and gait. Treatment - Demonstrate exercise for incoordination – Frenkel's and weighted exercises. Demonstrate techniques for re education of balance and equilibrium reactions by visual compensation. Describe use of appropriate aids for ambulation depending on the severity of affection – walker, elbow crutches, quadripod, walking sticks, etc.	3 Hrs	4 Hrs	3 Hrs
10	POLIOMYELITIS	3 Hrs	4 Hrs	3 Hrs

	Anatomy of Anterior horn cell Define poliomyelitis and review the stages in the disease – acute, recovery and residual paralysis. Describe treatment in the acute stage: heat, chest care, positioning. Describe the assessment of patient in recovery stage: active and passive range of motion, soft tissue tightness, and muscle power and spinal deformities. Demonstrate treatment in the recovery stage: muscle strengthening – progressive resisted exercises, active – assisted exercises, active and active – resisted exercises. Describe the role of suspension and hydrotherapy. Describe the treatment of soft tissue tightness by passive stretching, auto stretching, pre – operative assessment of contractures: hip flexion, TA contracture, knee flexion and foot deformities. Describe also assessment of limb strength discrepancy and spinal deformities. Review orthotic aids commonly used the management of polio. Describe tendon transfer operations commonly performed. Describe functional retraining for self care, gait training and posture correction.			
11.	4. CEREBRAL PALSY Define cerebral palsy and describe the topographical classification – monoplegia, diplegia, paraplegia, hemiplegia and tetraplegia. Describe types of cerebral palsy: visual, hearing, speech, and intelligence. Assess reflex activity at different levels: cortical, midbrain, brain stem, spinal. d Assess developmental mile stones from birth to five years. Assess functional ability: Prone to supine (rolling) coming to sitting, quadripod, crawling, kneeling, knee-stand, stand with support and walking. Examine for contractures as follows: Hip flexion, adduction, internal rotation, knee flexion, ankle plantar flexion, inversion / eversion, flexion contracture of elbow, wrist, fingers and spinal deformities. Treatment – Describe and demonstrate the treatment motor dysfunction: passive movement, stretching of soft tissue tightness, use of ice to reduce spasticity, positioning the child to prevent soft tissue contractures, to inhibit abnormal reflexes and to facilitate volitional movement. Describe and demonstrate the techniques of carrying of different types of children, encouraging bi manual activities in	4 Hrs	6 Hrs	3Hrs

	different starting positions like prone, sitting, and standing and activities across the midline. Describe appropriate home programmes for positioning the child, handling them and assisting improvement of function. Introduction to treatment techniques: Bobath, Rood.			
12.	Traumatic brain Injury Anatomy -Parts of Brain, Assessment of TBI, Management of TBI	5 Hrs	8Hrs	4 Hrs
13.	Motor Neuron Disease- Anatomy of Motor Neurons Assessment of TBI, Management of MND	3 Hrs	3 Hrs	3Hrs
14.	Multiple sclerosis- Anatomy of Myelin Sheath Assessment of Multiple sclerosis, Management of Multiple sclerosis	2Hrs	3Hrs	3Hrs
	Total hours (Theory /Practical / SPT)= 180	**60 Hrs**	**80 Hrs**	**40 hrs**

Supervised Practical training (SPT) (include practice session, assignment, journal presentation, seminar presentation etc)

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

REFERENCE

1. Cash's text book of neurology for physiotherapist by Patricia Downie.
2. Physical rehabilitation by Susan O. Sullivan.
3. Physical management for neurological conditions by Maria stokes.

SEMESTER 8

COURSE TITLE: CLINICAL POSTING/PRACTICE

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total Credits
		Total	L	P	L	P	L	P	

	Clinical posting/practice (clinical rotation CR)	**90**		**90**		**4**		**3**	**3**

Clinical Posting: Our students are posted in various clinical areas/ wards on rotation basis. During clinical posting they are clinically trained to provide Physiotherapy care under supervision. They also trained on patient assessment, performing special test, identifying indications for treatment, ruling out contraindications, bed side approach, decision on treatment parameters, dosage and use of relevant outcome measures under supervision. Evidence based practice will be part of clinical training.

During the clinical practice, student should be able to successfully execute the competencies in assessment, physical diagnosis on ICF basis, plan of care and therapeutic interventions relating to neuromuscular, orthopedic & cardiorespiratory dysfunctions. Student should become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, pediatric and geriatric). Student should learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies during the clinical practice and successfully perform on real patients during the final evaluation of the course.

All the clinical training work should be properly documented, signed by respective clinical in-charge, indexed in a separate file and should be submitted before the final exam.

The students should maintain a clinical log book as per the instruction by respective clinical in charge.

DETAILS OF CREDITS FOR COMPULSORY INTERNSHIP TRAINING

All candidates of Bachelor of physiotherapy must undergo a compulsory rotatory internship for a period of six months after the successful completion of the final semester examination.

COMPULSORY INTERNSHIP TRAINING		
Total days	**Hours per day**	**Total hours of Practice**
180 days (6 months)	**7**	**1260**
DETAILS OF CREDITS		
For internship 45 course hours= 1 credit		**Total credits**
Total hours =1260		**28 credits**
Internship credit= 1260hrs/45hrs=28 credits		

MEENAKSHI

ACADEMY OF HIGHER EDUCATION & RESEARCH

DEEMED TO BE UNIVERSITY U/S 3 OF UGC ACT, 1956

FACULTY OF PHYSIOTHERAPY

12, Vembuliamman Koil Street, West K.K. Nagar, Chennai – 600 078

CHOICE BASED CREDIT SYSTEM (CBCS)

CHOICES AND SYLLABUS FOR

GENERIC ELECTIVES, ABIITY ENHANCEMENT & SKILL

ENHANCEMENT COURSES

BACHELOR OF PHYSIOTHERAPY (BPT)

DEGREE PROGRAM

2021-22

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MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH
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No.12, Vembuliamman Koil Street, West K.K.Nagar, Chennai-78.

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FACULTY OF PHYSIOTHERAPY
MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)
No.12, Vembuliamman Koil Street, West K.K.Nagar, Chennai-78.

COURSE TITLE: INTRODUCTION TO PROGRAMMING IN JAVA
SEMESTER 1

Course Outcomes:

- Understand why Java is useful for the design of desktop and web applications.
- Knowledge on how to implement object-oriented designs with Java.
- To identify Java language components and how they work together in applications.
- To design and program stand-alone Java applications.

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Introduction to programming in Java **(Skill Enhancement)**	**45**	**15**	**30**	**01**	**01**	**1**	**1**	**2**

COURSE CONTENT				
s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
1	Unit 1: Introduction to Java-Features of Java-Basic Concepts of Object Oriented Programming-Java Tokens-Java Statements-Constants-Variables -Data Types- Type Casting-Operators-Expressions-Control Statements: Branching and Looping Statements.	5	5	5
2	Unit-2: Classes, Objects and Methods-Constructors-Methods Overloading- Inheritance-Overriding Methods-Finalizer and Abstract Methods-Visibility Control –Arrays, Strings and Vectors-String Buffer Class-Wrapper Classes.	5	5	5
3	Unit 3: Interfaces-Packages-Creating Packages-Accessing a Package- Multithreaded Programming-Creating Threads-Stopping and Blocking a Thread-Life Cycle of a Thread-Using Thread Methods-Thread Priority- Synchronization-Implementing the Runnable Interface	5	5	5
	Total 45 Hrs. (Lecture & Practical)	**15**	**15**	**15**

SPT : Supervised Practical training

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

Textbook Reference:

1. Balagurusamy,2004,Programming with JAVA, 2 nd Edition,Tata McGraw-Hill Publishing Co.Ltd.
2. Herbert Schildt,2005,The Complete Reference Java™ 2, 5th Edition,Tata McGraw -Hill PublishingCo. Ltd.
3. Y. Daniel Liang ,2003,An Introduction to JAVA Programming, Prentice -Hall of India Pvt. Ltd.
4. Cay S. Horstmann and Gary Cornell,2005, Core Java™ 2 Volume I -Fundamentals, 7th Edition-Pearson Education.
5. Ken Arnold, James Gosling and David Holmes,2003, The Java™ Programming Language,3rd Edition, Pearson Education.

COURSE TITLE: BASIC PHOTOGRAPHY

Course Outcomes:

- To understand the basic skills of Photography
- To use a variety of brainstorming techniques to generate novel ideas in photography
- Sufficient photographical mastery of technical and formal challenges pertinent to a body of original visual work.

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Basic Photography (Skill Enhancement)	45	15	30	01	01	1	1	2

COURSE CONTENT				
s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
1	**Unit I** Human Eye and Camera. Basics of Camera.(aperture, shutter speed, Focal length, f -stop, Depth of field, Depth of focus, etc.,) Camera operations. Types of Camera. Types of Lenses. Visual Perception, Composition - Framing Shots, Perspectives, filters, bellows, converters etc.,	3	2	2
2	**Unit II** Understanding lighting - Indoor and Outdoor, Exposing and Focusing, Types of lighting, Natural and Artificial Lights, Controlling lights, Exposure Meters, Differential focus, Filters, Flashes. Designing with light.	3	2	2
3	**Unit III** Digital Photography – Introduction to Digital photography, Still cameras – SLR, DSLR, Digital Video Cameras, Professional Cameras, Pixels, Mega pixels Storage devices – Memory Card SD / HD format, Lighting for digital Photography, LED cool lights, usages, Impact of Mobile Phone over Digital Cameras.	3	2	2

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
4	**Unit IV** Basic Principles. Aesthetics. Basics of photo-journalism, Photo-features, Photo -essays, Writing captions, Visual story telling. Photography for advertising—Consumer and industrial. Planning a shoot-studio, location, set props and casting.	**3**	**2**	**2**
5	**Exercises:** Landscape (scenic, people, birds/animals, monuments), Portraits, Photo story, Photo language, Environmental exposure – wildlife photography, Panorama, Montage, Indoor photography – Still life, etc.,	**3**	**7**	**7**
	Total 45 Hrs. (Lecture & Practical)	**15**	**15**	**15**

SPT : Supervised Practical training

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

Textbook Reference:

1. Calder, Julian & Garrett, John (1999):The 35 mm Photographer's Handbook, Marshall Editions Limited, London.

2. Constantine, John &Valice, Julia (1983): The Thames-Hudson Manuel of Professional Photography, Thames-Hudson, London.

3. Solomon, Alain (1987):Advertising Photography, American Photographic Publishing and Imprint ofWatson Guptill Publication, New York.

SEMESTER 2

COURSE TITLE: INFECTION PREVENTION AND CONTROL

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Infection prevention and control (Ability Enhancement)	**30**	**30**		**02**		**2**		**2**

Aim: The program is expect to give knowledge about the various practices in prevention of infection in both hospital & community. The students will understand the principles and practices of infection control & how to implement them effectively.

Learning Objectives

At the end of the course the student should be knowledgeable about

1. How to prevent and control infections in hospitalized patient to ensure patient safety.
2. How to prevent infections in employees thus assuring employees safety within the organization
3. How to prevent and control infections in the environment with in the hospital and homes thus ensuring environmental safety
4. How to plan and implement an infection prevention program

COURSE CONTENT				
s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
1	**Unit 1** : Overview of infectious diseases with special reference to communicable pathogens. Hand hygiene principles, practice and audit. Handling of patients with communicable diseases and the principles of isolation policies. Reporting of communicable diseases to the governmental agencies. Biomedical waste management and the current regulations.	**10**		
2	**Unit 2** : Infection prevention in Operating rooms, Casualty, Dialysis , transplant units, Burns unit. Occupational exposure to infection and management, environmental surveillance protocols.	**8**		
3	**Unit 3** : Infection control in Central Sterilization Services department, Laundry, Diet kitchen. Infection control in Intensive Care Units including prevention of Device Associated Infections.	**8**		
4	**Unit 4** : Monitoring of Antimicrobial use	**4**		
	Total Hrs.	**30**		

Reference

1. **Handbook Of Hospital Infection Control – Sanjay Singhal**

COURSE TITLE: SOFT SKILL TRAINING

Course Objective:

After 30 hours of theory lecture the student should be able to

1. Create an overall development of the student.
2. Assist themselves with the formulation of problem-solving skills
3. Take appropriate and responsible decisions.
4. Build a desire to achieve individual goals.
5. Grow proper behavioral and behavioral aspects and build the same equities.

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Soft skill training (Ability Enhancement)	**30**	**30**	**00**	**02**	**00**	**02**	**0**	**02**

s.no	Title of Content	Hours of teaching (2 Credits = 30 Hours) Theory
1	Soft Skills i. Introduction. ii. Definition and Various components. iii. Importance of learning. iv. Soft skills vs. Hard Skills.	1
2	Work Ethic i. Meaning and definition ii. Importance iii. Various categories of work ethnics iv. Role in career development	3
3	Positive Thinking i. Understanding positivity ii. Moving out negativity iii. Overcoming complexes iv. Self introspection v. Self motivation	3
4	Non verbal communication I. Kinesics. II. Hap tics. III. Vocalic. IV. Proxemics. V. Chronemics.	4

5	Verbal communication I. KISS Principle II. Intrapersonal Communication III. Interpersonal Communication IV. Small group communication V. Public communication	4
6	Etiquette and Good Manners I. Introduction II. Types III. Principles IV. Method of Application V. Overcoming masking VI. Being infallible	3
7	Emotional literacy I. Definition and Basic Principles I. Classification II. Method of utilization in home and workplace III. Achieving holistic mindset	2
8	Creative thinking I. Introduction II. Principles III. Theory of Inventive Problem Solving IV. Standing out	2
9	Art of negotiation I. Stages II. Rules III. Tactics	2
10	Capacity Building I. Peer Learning. II. Leadership Development. III. Collaboration Planning.	2
11	Resume structuring I. Core components II. Chronologically placing III. Need based skill Projection	2
12	Acumen I. Definition II. Principles III. Various disciplines IV. Imbibing into career	2
TOTAL TEACHING HOURS		**30**

PRINCIPAL
FACULTY OF PHYSIOTHERAPY
MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)
No.12, Vembuliamman Koil Street, West K.K.Nagar, Chennai-78.

Reference

1. SOFT SKILLS & PROFESSIONAL COMMUNICATION. N.p., Tata McGraw-Hill Education.
2. Managing Soft Skills for Personality Development – edited by B.N.Ghosh, McGraw Hill India, 2012.
3. English and Soft Skills – S.P.Dhanavel, Orient Blackswan India, 2010.
4. Pease, Allan and Peas, Barbara. The Definitive Book of Body Language. New York: Random House.2006.Print
5. Schafer, W. (1998). Stress Management for Wellness. 4th edition. Australia: Thomson & Wadswoth.

SEMESTER 3

COURSE TITLE: DISASTER RISK MANAGEMENT

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Disaster risk management (Skill Enhancement)	**45**	**15**	**30**	**1**	**2**	**1**	**1**	**2**

Learning objectives

At the end of the course, the candidate will-

1. Able to increase the knowledge and understanding of the disaster phenomenon, its different contextual aspects, impacts and public health consequences.
2. Able to increase the knowledge and understanding of the International Strategy for Disaster Reduction (UN-ISDR) and to increase skills and abilities for implementing the Disaster Risk Reduction (DRR) Strategy.
3. To ensure skills and abilities to analyses potential effects of disasters and of the strategies and methods to deliver public health response to avert these effects.
4. To ensure skills and ability to design, implement measures in reducing the risk.

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
1	**Introduction to Disaster** Different types of disaster ➢ Natural disaster : Flood, cyclone, landslides, earthquakes etc. ➢ Man made disaster: Fire, Industrial Pollution, Nuclear Disaster, Biological Disasters, Accidents (Air, Sea, Rail & Road), Structural failures(Building and Bridge), War & Terrorism etc. ➢ Causes, effects & practical examples for all disaster	**3**		
2	Risk and Vulnerability Analysis 1. Risk : Its concept and analysis 2. Risk Reduction 3. Vulnerability : Its concept and analysis 4. Strategic Development for Vulnerability Reduction	**3**	**8**	
s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
3	Disaster Preparedness and Response	**5**	**8**	**2**

	Preparedness 1. Disaster Preparedness: Concept and Nature 2. Disaster Preparedness Plan 3. Prediction, Early Warnings and Safety Measures of Disaster. 4. Role of Information, Education, Communication, and training, Role of Government, International and NGO Bodies. Response 1. Disaster Response : Introduction 2. Disaster Response Plan 3. Communication, Participation, and Activation of Emergency Preparedness Plan 4. Search, Rescue, Evacuation and Logistic Management			
4 5	**Approaches to disaster management** • Approaches to Disaster Risk reduction • Disaster cycle - its analysis, Phases, Culture of safety, prevention, mitigation and preparedness. • Community based DRR, Structural-nonstructural ensures. • Roles and responsibilities of- community. **Training, awareness program on disaster management** Training and drills for disaster preparedness, Awareness generation program, Usages of GIS and Remote sensing techniques in disaster management,	**4**	**10**	**2**
	Total Hours = 45 hrs.	**15**	**26**	**4**

References:

1.Handbook of Disaster and Emergency Management Amir Khorram-Manesh
2. Disaster management-M.M.Sulphey.
3. Techniques for Disaster Risk Management and Mitigation Prashant K. Srivastava, Sudhir Kumar Singh.

SEMESTER 3

CULINARY SKILLS FOR IDEAL NUTRITION

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course		Hours per semester	Hours/week	Credits	Total

No	Course title	Total	L	P	L	P	L	P	credits
	Culinary skills for ideal Nutrition (Skill Enhancement)	**45**	**15**	**30**	**1**	**2**	**1**	**1**	**2**

Learning objectives

- Enable students to understand the basic food groups, their nutrient composition and function
- Aware about the concept of balanced diet and ideas for planning a healthy menu
- Gain knowledge about cooking methods and be able to make healthier food choices
- To develop the skills healthy dishes using the food groups

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	UNIT I - Introduction Foods and Nutrients Foods- definition, basic four and five food groups - cereals and millets, pulses, fruits and vegetables, fats and oils, sugar and jaggery, Foods and Nutrients, Functions of Foods- energy yielding, body building and protective foods, balanced diets, vegetarian vs non vegetarian foods, Functional foods and Dietary supplements. Food adulteration, common adulterants used and methods of identification, nutrition labeling, food standards.	4		
	UNIT II- Methods of Cooking, Preservation and Sensory Evaluation Principles and techniques of sensory evaluation, interpretation tools Cooking methods – moist heat, dry heat, advantages and disadvantages, changes during cooking, nutrient preservation while cooking Preservation techniques, advantages and disadvantages	4	1	
	UNIT III- Nutritional Requirements and Meal Planning Basic nutritional requirements through different stages of life cycle, basic principles of meal planning, revisiting concept of balanced diets	4	2	
	REGIONAL COOKERY North & south Indian **MENU PLANNING** • Types of Menu • Principles • Presentation	3	2	

	Practical (20 hrs.) 1. Introduction to cutlery and crockery 2. Art of table setting 3. Preparation of few commonly consumed cereal preparations 4. Preparation of few commonly consumed pulse dishes 5. Vegetable cooking without nutrient loss 6. Preparation and display of fruit salads 7. A day's menu for an adult sedentary worker 8. A day's menu for an 8 months old infant 9. Nutritious snacks for a preschooler 10. Nutritious lunch for a school going boy and girl 11. A day's menu for an 16 year old boy and girl 12. Consistency modified menu for a 80 year old 13. Simple tests to identify food adulteration 14. Sensory evaluation of the prepared items 15. Preparation of some specialized Indian Sweets a. Milk based b. Cereal based c. Vegetable based 16. Preparation of some specialized bakery items a. Pizza b. Pastry c. Show piece brea 17. Types of salads & different salad dressings Sandwiches 18. Bakery theory • Principles, Bread making, Faults & remedies • General idea of cakes, pastries, sponge & icing		**20**	**5**
	Total Hours (Theory /Practical / SPT)	**15**	**25**	**5**

SPT : Supervised Practical training* (include practice session, assignment, journal presentation, seminar presentation etc.)

All the SPT work should be properly documented, signed by respective in-charge of the subject, indexed in a separate file and should be submitted before the final exam. It is the responsibility of the class representative to submit the file to the teacher before the exam

Text Books

1. Peckham, G.G., Foundation of Food Preparation, The MacMillan Company, London, 1994
2. Sumati, M.R. Food Science, New Age International (p) Ltd Publishing House, New Delhi, 1997

Reference Text

1. Gupta LC, Gupta K, Gupta A. Foods and Nutrition Facts and Figures, 6th Ed., Jaypee, 2006.

2. Parker R O. Introduction to Food Science, Thomson Delmar Learning, 200

SEMESTER 4
COURSE TITLE: NUTRITION IN HEALTH AND DISEASES

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Nutrition in health and diseases (Generic Elective)	**30**	**30**		**2**		**2**		**2**

Learning Objectives:
At the end of the course, the candidate will-

1. Enable the student to have a clear understanding of dietary management in health & disease conditions

2. To enable the students to have a clear understanding of diet and its health implications along with the management of diet-related health issues.

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	UNIT I Definition for Nutrition, balanced diet-carbohydrate, lipids, proteins, vitamins, minerals. PCM - Kwarshiorkar and marasmus, obesity, Measurement of energy expenditure, calorimeter, BMR and its measurement, Calorific values of foods,	**6**		
	UNIT II Dietary managements with reference to Gastro Intestinal problem-upper GI tract- peptic ulcer disease, lower intestinal tract – Diarrhea, cystic fibrosis, inflammatory bowel diseases, large intestine disease – Diverticular diseases, Irritable bowel syndrome, constipation. **UNIT III** Common food allergy, Food intolerance, Lactose intolerance. Requirements during infancy, adolescence, adulthood, pregnancy, lactation and old age	**6** **6**		

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	UNIT IV Dietary managements with reference to coronary heart diseases and hypertension, Diabetes mellitus, renal disease-Glomerulonephritis, Nephrotic syndrome, Rena failure- acute, chronic and kidney stone problem	**6**		
	UNIT V Dietary managements with reference to AIDS, Cancer, Surgery and Nutritional support. Dietary management in Dehydration and water intoxication, Management in acid base imbalance.	**6**		
	Total hours = 30 hrs.	**30**		

Text books

1. William's Basic Nutrition and Diet Therapy – Staci Nix.
2. Nutritional Biochemistry - Swaminathan

Reference books

1. Human Nutrition – Catherine Geissler and Hilary Powers
2. Nutrition Essentials and Diet therapy.
3. Lipid disorders-John Reckless and Jonathan Morell
4. Diet management –Rekha Sharma

SEMESTER 4

COURSE TITLE: INTRODUCTION TO VISUAL COMMUNICATION

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Introduction to visual communication (Generic elective)	**30**	**30**		**2**		**2**		**2**

LEARNING OBJECTIVE: Apply appropriate communication skills across settings, purposes, and audiences.
Demonstrate knowledge of communication theory and application

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LEARNING OUTCOMES:

1. Demonstrate critical and innovative thinking.
2. Display competence in oral, written, and visual communication.
3. Apply communication theories.

s. no	Title of content	Hours of teaching/ Learning

		Theory	Practical	SPT*
	Unit I Need for and the Importance of Human and Visual Communication. Communication a expression, skill and process, Understanding Communication: SMRC-Model	6		
	Unit II Communication as a process. Message, Meaning, Connotation, Denotation Culture/Codes etc. Levels of communication: Technical, Semantic, and Pragmatic. The semiotic landscape: language and visual communication, narrative representation	6		
	Unit III Fundamentals of Design: Definition. Approaches to Design, Centrality of Design, Elements of Design: Line, Shape, Space, Color, Texture. Form Etc. Principles of Design: Symmetry. Rhythm, Contrast, Balance Mass/Scale etc. Design and Designers (Need, role, process, methodologies etc.)	6		

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	Unit IV Principles of Visual and other Sensory Perceptions. Color psychology and theory (some aspects) Definition, Optical / Visual Illusions Etc. Various stages of design process- problem identification, search for solution refinement, analysis, decision making, and implementation.	6		
	Unit V Basics of Graphic Design. Definition, Elements of GD, Design process-research, a source of concept, the process of developing ideas-verbal, visual, combination & thematic, visual thinking, associative techniques, materials, tools (precision instruments etc.) design execution, and presentation.	6		
	Total Hours = 30hrs	**30**		

REFERENCES:

1. Communication between cultures - Larry A. Samovar, Richard E. Porter, Edwin R. McDaniel & Carolyn Sexton Roy, Monica Eckman, USA, 2012

2. Introduction to Communication studies - John Fiske & Henry Jenkins 3rd edition, Routledge, Oxon 2011

3. An Introduction to communication studies - Sheila Steinberg, Juta & Co., Cape Town, 2007

4. One World Many Voices: Our Cultures - Marilyn Marquis & Sarah Nielsen, Wingspan Press, California, 2010

Course Title: YOGA PRACTICE

Learning objective:

- After completion of the course the students will be able to understand various principles of Yoga, formulate yoga therapy for specific diseases and causes of diseases and role of yoga in its healing of various ailments affecting the human body.
- Gain knowledge about benefits and practice of asana
- Understand general guidelines for practicing yoga
- Understand different methods & types of yoga

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	YOGA PRACTICE (Generic Elective)	60	30	30	02	01	2	1	3

COURSE CONTENT				
s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
1	**UNIT 1**	7	4	2
	Fundamentals of Yoga: Definitions, Misconceptions, Aim and Objectives of Yoga. • Introduction to Vedas, Upanishads and			

	Prasthanatrayee; Concept of Purushartha Chatushtaya • General introduction to Shad-darshanas with special emphasis on Samkhya and Yoga Darshana, Yoga in Vedanta. • Principal Upanishads, BhagavadGita, Yoga Vasishth • Streams of Yoga Streams of yoga, karma yoga, bhakthi yoga, jana yoga, raja yoga, hatha yoga, yoga disciplined way of life. • Astanga Yoga Astanga yoga-Yama, Niyama,Asana, Pranayama, Pratyahara, Dharana, and Samadhi Concept of Kaivalya Pada			

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
2	**UNIT 1I**	**7**	**4**	**2**
	Therapeutic Yoga • **Yogic Practice –** Management of the diseases through suitable yogic practices - Yogic diet, Yama and Niyama, Shatkarma, Asanas, Pranayama; Meditation; changes in lifestyle according to yogic scriptures. • **Integrated Approach of Yoga therapy for the following Common Ailments:** • **Respiratory disorders –** Allergic Rhinitis & Sinusitis: Chronic Bronchitis, Bronchial Asthma • **Cardiovascular disorders:** Hypertension, Angina pectoris, Cardiac asthma: • **Endocrinal and Metabolic Disorder** - Diabetes Mellitus, Hypo and Hyper- Thyroidism; Obesity: Metabolic Syndrome			
3	**UNIT 1II**	**6**	**4**	**2**
	Management of the diseases through suitable yogic practices **Obstetrics and Gynecological Disorders** Menstrual Disorders: Dysmenorrhea, Menopause and peri-menopausal syndrome: Yoga for Pregnancy and Childbirth, Antenatal care, Post-natal care. • **Gastrointestinal Disorders**: Gastritis, Indigestion, Peptic Ulcers, Constipation, Diarrhea, Irritable Bowel Syndrome, colitis, Piles.			

	• **Muscular-Skeletal Disorders:** Back Pain, Intervertebral disc prolapse (IVDP) Lumbar Spondylosis, Cervical Spondylosis, , Arthritis • **Neurological Disorders:** Migraine, Tension-headache, Epilepsy • Psychiatric Disorders: Neurosis, Anxiety disorders, Phobias, Depression			

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
4	**UNIT IV**	**5**	**4**	**2**
	Practical Yoga Yogic Practices • **Shatkarmas** Vamandhauti, Vastradhauti, Dandadhauti, Laghoo and Poorna sankhaprakshalana, Neti (Sutra and Jala), Kapalbhati(Vaatkrama,Vyutakrama & Sheetkarma), Agnisara, Nauli, Tratak • **Suryanamaskar** Suryanamaskar must be practiced traditionally • **Asanas (yogic postures)** **Standing Postures** Ardhakatichakrasana, Padahastasana, Ardhachakrasana, Trikonasana, Parivrittatrikonasana, Parsvakonasana, Veerasana. • **Sitting postures** -Paschimottanasana, Suptavajrasana, Ardhamatsyendrasana, Vakrasana, Baddhakonasana, Merudandasana, Akarnadhanurasana, Gomukhasana, • **Prone postures** Bhujangasana, Shalabhasana, Dhanurasana, Urdhvamukhosvanasana, Makarasana, • Supine postures- Halasana, Chakrasana, Sarvangasana, Matsyasana, Shavasana, Setubandhasana,			
5	**UNIT V**	**5**	**4**	**2**
	Balancing postures- Vrikshasana, Garudasana, Namaskarasana, Tittibhasana, Natrajasana			

	• **Pranayama:** Breath awareness, Sectional breathing, Nadishuddhi, Suryabhedan, , Ujjai , Sitali, Sitkari, Bhastrika, Bhramari, Bahyavritti, Abhyantarvritti, Stambhavritti Pranayama • **Practices leading to Meditation:** Pranav and Soham Japa, Yoga Nidra, Antarmauna, Ajapa Jap, Practices leading to Breath Meditation, Practices leading to Om Meditation, Practices leading to Vipassana Meditation, Practices leading to Preksha Meditation • **Bandhas and Mudras:** Mula Bandha, Jalandhara Bandha, Uddiyana Bandha, Maha Bandha, Yoga Mudra, Maha Mudra, Shanmukhi Mudra, Tadagi Mudra, VipareetKarni Mudra • **Contemporary Yogic Practices** Yogic Sukshma Vyayama (Swami Dheerandra Brahmchari), Cyclic Meditation (S-VYASA); Mind Sound Resonance Technique (SVYASA); Transcendental Meditation (Maharshi Mahesh Yogi); Yoga Nidra (BSY); Savita Ki Dhyan Dharana (DSVV)			
	Total hrs. (Lecture & Practical)	**30**	**20**	**10**

SPT : Supervised Practical training

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Reference

1.B.K.S.Iyenkar- Light on Yoga Sutras of Patanjali(Haper Collins Publications India Pvt. Ltd. New Delhi) Swami Sivananda: Practice of Yoga (The Divine Life Society, Shivananda Nagar, P.O.,

2.U.P.Himalayas, India) Swamy Satyanada Saraswathi: Asanas, Prnanayama, Mudra, Bhndha, (India: Yoga Publications Trust, Munger, Bihar

3.Swami Satyananda Saraswati: Yoga and Cardio Vascular Management. Yoga Publication Trust, Mungar-2005

4. Clennell B. The Woman's Yoga Book: Asana and Pranayama for All Phases of the Menstrual Cycle. Shambhala Publications; 2016 ;

5. Nagarathna R, Nagendra HR, Monro R. Yoga for common ailments. Gaia Books Limited; 1990.

COURSE TITLE: BASIC LIFE SUPPORT

Course Objective:

After 30 hours of theory lecture:

1. Student will be able to address the emergency situation and provide the effective rescue technique.
2. The student will be able to identify the restriction of involvement of breathing.
3. The student will be able to assess the individual and proceed further in chain of survival.
4. The complete learning skill will be demonstrated and student will be able to provide effective chest compressions and manage victims of chocking.
5. The student will be able to differentiate the CPR method of approach for adult, children and infants

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Basic Life support (skill Enhancement)	60	30	30	02	02	2	1	3

COURSE CONTENT				
S.N.O	TITLE OF CONTENT	HOURS OF TEACHING/ LEARNING		
		THEORY	PRACTICAL	SPT (Supervised Practical training)
1	➢ PRINCIPLES OF CPR ➢ INTRODUCTION TO CPR ➢ SIGNIFICANCE OF CPR AS FIRST AID	6	2	4

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2	➢ CHAIN OF SURVIVAL AND CRITICAL CONCEPTS OF CPR ➢ AHA GUIDELINES AND METHOD OF APPORACH ➢ ONE RESCUER ADULT CPR ➢ TWO RESCUER ADULT CPR	6	2	4
	TITLE OF CONTENT	**THEORY**	**Practical**	**SPT**
3	➢ SKILL IN HANDLING THE CHOKING/DROWNING CONDITIONS ➢ ADULT CHOKING ➢ CHILD CHOKING ➢ INFANT CHOKING	6	2	4
4	➢ MANAGEMENT OF RESPIRATORY ARREST ➢ CHILD CPR ➢ INFANT CPR	6	2	4
5	➢ CPR MODIFICATIONS IN SPECIAL POPULATION ➢ PATIENT WITH DISABILITIES, PREGNANCY ➢ AUTOMATED EXTERNAL DEFIBRILLATOR	6	2	4
	Total hours (Theory /Practical / SPT)= 60 Hrs	**30**	**10**	**20**

THEORY=30, PRACTICAL=10
SUPERVISED PRACTICAL TRAINING= 20

SPT : Supervised Practical training*

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REFERENCES:

1. Davidson,A Text Book of Medicine, Churchill Livingston, 21 st Ed, 2010.
2. Chandra, Handbook of Interventional Cardiology, JP, 1 Ed, 2015
3. Nancy caroline – Emergency care in the streets – seventh edition
4. AHA – Basic Life Support Manual – 2020 guidelines.

COURSE TITLE: INTRODUCTION TO PUBLIC SPEAKING

Course objective

- Develop skills in effective speaking & listening
- Develop skills in speech composition
- Demonstrate knowledge of speech delivery technique
- Use supporting materials and presentation aids in speech preparation
- Write speech with a purpose

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Introduction to public speaking (skill Enhancement)	**45**	**15**	**30**	**01**	**01**	**1**	**1**	**2**

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	Unit 1 **Introduction to Public speaking** Basic communication concepts, processes, and models; Communication concepts and principles and public speaking; Steps and methods of speech preparation; Ethics in public speaking	**2**		
	Unit 2 **Listening and speech criticism** Effective listening, the listening process, and types of listening; Listening barriers; Identifying and improving listening styles; Evaluating speech and effective speech techniques.	**3**	**2**	
	Unit 3 **Selecting topic and Knowing your audience** Identifying sources; Tools and techniques for selecting and refining speech topics; Identifying speech purposes; Central idea statement; The central idea; Audience analysis techniques	**3**	**2**	**2**

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	Unit 4 **Speaking with a purpose** Informative, persuasive, and ceremonial speeches	2	6	2
	Unit 5 **Organizing and outlining your speech** Efficient organizational methods; Good form in speech preparation; Guidelines for organizing components and main points in a speech; Patterns of organization; Constructing an outline	2	6	2
	Unit 6 **Delivering your speech using visual aids** The mechanics of verbal and nonverbal communication in speech delivery; Modes of speech delivery; Speaking style and language; Effective delivery techniques; Incorporating presentation aides	**3**	**6**	**2**
	Total hours (Theory /Practical / SPT)= 45 Hrs.	**15**	**22**	**8**

Supervised Practical training (SPT) (include practice session, assignment, journal presentation, seminar presentation etc.)

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Textbook reference

- DeVito, J.A. (2009). The Essential Elements of Public Speaking. (3rd ed.) Boston: Pearson Education, Inc.
- Lucas, S.E. (2009). The Art of Public Speaking. (10th ed.) New York: McGraw - Hill Co.
- Zarefsky, D. (2011). Public Speaking: Strategies for Success. (6th ed. Boston: Pearson Education, Inc).

COURSE TITLE: FABRICATION AND FITTING OF ORTHOTICS AND PROSTHETICS

Course objective

1. Gains Knowledge about Formulation methods of Prosthetics & Orthotics designs including selection of materials, components and additional aids.
2. Acquire knowledge about taking measurements for all casts that are necessary for proper fabrication and fitting.
3. Understand about the layout of design to obtain optimal fit and alignment.
4. Provides training in fitting & assessing static and dynamic alignment, where appropriate
5. Learn the technique of fabrication of prosthesis and orthotics

DISTRIBUTION OF CREDIT AND COURSE HOURS

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
	Fabrication and fitting of orthotics and prosthetics (skill Enhancement)	**45**	**15**	**30**	**01**	**01**	**1**	**1**	**2**

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
1	**Introduction to orthotics & prosthetics** Types of orthotics & prosthetics (Upper & lower limb) & various materials used in orthotics & prosthetics	**2**	**4**	
2	**Introduction to Material science** Common materials used in orthotics & prosthetics Metals, alloys, wood, leather, fabric, foams (Types, seasoning, tanning, preservation, lamination & properties)	**3**	**4**	
3	**Fabrication of orthotics & prosthetics:** Cast and measurement techniques, appropriate selection of materials and components, cast modification, fabrication and alignment technique, using of different technologies – its advantages and disadvantages	**3**	**4**	**2**

s. no	Title of content	Hours of teaching/ Learning		
		Theory	Practical	SPT*
	Design concept: Buckling, theories in failure, fatigue and stress	**3**	**4**	

4	concentrations, connections, Shear force and bending moment diagrams, centroids, 2nd moment of area and mass, theorem of parallel axes, bending stress, torsional stress of circular shafts, combined axial and bending stresses			
5	**Control systems:** Introduction to control theory and its applications in Prosthetics and Orthotics	**2**	**4**	**2**
6	Plaster of Paris & Silicon and its application procedure in Prosthetic & Orthotic techniques	**2**	**4**	**2**
	Total hours (Theory /Practical / SPT)= 45 Hrs	**15**	**24**	**6**

Supervised Practical training (SPT) (include practice session, assignment, journal presentation, seminar presentation etc)

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Text Book Reference

- Material science & process by MK Muralidhar
- Work shop technology by chapman