



MANIPAL

ACADEMY of HIGHER EDUCATION

(Deemed to be University under Section 3 of the UGC Act, 1956)

Manipal College of Health Professions

(Mangaluru Campus)

Manipal Academy of Higher Education, Manipal

Outcome-Based Education (OBE) Framework

Two Years Full Time

Postgraduate Program

(Choice - Based Credit System)

Master of Physiotherapy (Geriatrics)

MPT (Geriatrics)

With effect from July 2021

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Head of the Department

Dean

Deputy Registrar - Academics

Registrar

1. NATURE AND EXTENT OF THE PROGRAM

Background and need of the program:

Physiotherapy in India has a history of over 70 years. It is a changing and evolving profession which encompasses the concepts of public health and primary/secondary prevention, rehabilitation and fitness for work, self-management of long term conditions and the provision of palliative care for all ages. The physiotherapist works in a complex environment and with multidisciplinary teams in primary healthcare industry, schools, hospitals and private practices. This work takes place in diverse communities and cultures. In a climate of changing health needs and healthcare provision, the physiotherapist requires skills in leadership and decision making. Lifestyle changes over the years resulted in an increase in the problems of neurological, musculoskeletal and cardiopulmonary systems. This means that the services of physiotherapists are in greater demand. Here at MAHE, we constantly upgrade our education and clinical skills to keep up with the current needs. The infrastructure at Kasturba Hospital Udupi, Manipal, and Mangalore and Manipal Hospital Bangalore provide an almost unending canvas to work on.

Duration of the Program: Two years

- Four Semesters (Two years) of academic program

Aim of the Program:

- To provide an opportunity for qualified physiotherapists with an undergraduate degree to practice as **Geriatric Physiotherapists**.
- To educate and empower the students to be independent practitioners using an advanced body of knowledge in a competent manner towards those who need such services, using evidence based practice with autonomy in quality assurance while maintaining the humanitarian approach of service.
- To acquire skills required to be an effective theoretical & clinical teacher in physiotherapy, be proficient in research methods and apply these in the pursuance of research in physiotherapy.
- To learn elements of administration in order to be an effective physiotherapy manager.

- v. To practice life-long learning, professional development, for the benefit of students, the profession and to increase the effectiveness of health and social care delivery.

Entry level Qualification:

- i. The candidate must have passed Bachelor of Physiotherapy from any recognized University in India or abroad.
- ii. The candidate should have obtained an aggregate of 50% in all subjects of Bachelor of Physiotherapy

Scope of the Program:

On completion of the M.P.T. program, the graduates will be a competent physiotherapy specialist having heightened ethical and moral responsibilities as a health professional, demonstrating strong clinical reasoning skills with evidence based approach in assessment, clinical diagnosis and intervention of a wide range of diseases and dysfunctions of elderly population.

- Postgraduates will have job opportunities in various acute hospitals, rehabilitation centers, multispecialty hospitals, special schools, geriatric centers, private organizations, non-government organizations and government institutions.
- Postgraduates can also pursue doctoral studies in clinical areas of their interest and become teaching faculty in the academic institutions.
- Postgraduates may also undertake research in Physiotherapy.

2. PROGRAM EDUCATION OBJECTIVES (PEOs)

The overall objective of the learning outcome-based curriculum framework (LOCF) for MPT (Geriatrics) are as follows:

PEO No.	Education Objective
PEO 1	Students will be able to apply advanced body of knowledge and clinical competency with evidence based practice in Physiotherapy to achieve professional excellence.
PEO 2	Students will execute high order skills in analysis, critical evaluation and/or professional application of clinical and practical skills in Physiotherapy
PEO 3	Students will practice the profession by ethical norms and communicate effectively with the multi-disciplinary team.
PEO 4	Students will acquire creative proficiency in interpersonal and collaborative skills to identify, assess and formulate problems and execute the solution.
PEO 5	Students will synthesize research ideas, develop innovations, incubate new concepts and encourage entrepreneurship.
PEO 6	Students will display lifelong learning process for a highly productive career and will be able to relate the concepts of Physiotherapy towards serving the cause of the society.

3. GRADUATE ATTRIBUTES

S No.	Attribute	Description
1	Professional Knowledge	Critically appraise scientific knowledge and integrate evidence based practice as a health care professional
2	Clinical / practical skills	Apply Clinical / practical skills to prevent, assess and manage quality health care services
3	Communication	Displays empathetic and professional communication skills to patients/clients, care-givers, other health professionals and other members of the community
4	Cooperation/Team work	Ability to practice collaboratively and responsibly with multidisciplinary team members to deliver high quality health care
5.	Professional ethics	Ability to resolve ethical issues and practice the ethical values in the professional life
6.	Research / Innovation-related Skills	Ability to generate and investigate research questions and translate the evidence into clinical practice.
7.	Critical thinking and problem solving	Ability to reason and judge critically and provide solutions for real life situations
8	Reflective thinking	Employ reflective thinking along with sense of awareness of one self and society
9	Information/digital literacy	Excel in use information communication and technology in ongoing learning situations
11.	Multi-cultural competence	Ability to effectively lead and respond in a multicultural society
12.	Lifelong Learning	Demonstrate the ability to acquire knowledge and skills that are necessary for participating in

S No.	Attribute	Description
		learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social and cultural objectives, and adapting to demands of work place through knowledge/skill development/reskilling.

4. QUALIFICATION DESCRIPTORS:

- a. Apply (i) Advanced and up-to-date knowledge and excel in the academic field of study as a whole and its applications, and links to related disciplinary areas/subjects of study; including a critical understanding of the established theories, principles and concepts, and of a number of advanced and emerging issues in the field of Physiotherapy (ii) Procedural knowledge that creates different types of professionals related to the Physiotherapy, including research and development, teaching and in government and public service; (iii) Professional and communication skills in the domain of Physiotherapy, including a critical understanding of the latest developments, and an ability to use established techniques in the domain of Physiotherapy.
- b. Possess comprehensive knowledge about Physiotherapy, including current research, scholarly, and/or professional literature, relating to essential and advanced learning areas pertaining to the field of study, and techniques and skills required for identifying problems and issues.
- c. Proficient skills in i) identifying the issues in health care needs; ii) collection of quantitative and/or qualitative data relevant to client's needs and professional practice; iii) analysis and interpretation of data using methodologies as appropriate for formulating evidence based hypotheses and solutions.
- d. Apply knowledge, understanding and skills for critical assessment of a wide range of ideas and complex problems and issues relating to Physiotherapy in various specialties.
- e. Communicate efficiently with all stakeholders, and provide relevant information to the members of the healthcare team.
- f. Optimize one's own learning needs relating to current and emerging areas of study, making use of research, development and professional materials based on new frontiers of knowledge.
- g. Execute one's disciplinary knowledge and transferable skills to new/unfamiliar contexts and to identify and analyse problems and issues and seek solutions to real-life problems.

5. PROGRAM OUTCOMES (POs):

After successful completion of Master of Physiotherapy (Geriatrics) program students will be able to:

PO No.	Attribute	Competency
PO 1	Professional knowledge	Apply current evidence and scientific knowledge to work as an expert member of health care system
PO 2	Clinical/ Technical skills	Employ clinical skills to provide quality health care services
PO 3	Team work	Empower the team with shared goals with the interdisciplinary health care team to improve societal health
PO 4	Ethical value & professionalism	Impart ethical values and professionalism within the legal framework of the society
PO 5	Communication	Communicate professionally with the multidisciplinary health care team and the society
PO 6	Evidence based practice	Appraise and adopt high quality evidence based practice that leads to excellence in professional practice
PO 7	Life-long learning	Advance knowledge and skills with the use of recent technology for the continual improvement of professional practice
PO 8	Entrepreneurship, leadership and mentorship	Build entrepreneurship, leadership and mentorship skills to practice independently as well as in collaboration with the multidisciplinary health care team

6. COURSE STRUCTURE, COURSE WISE LEARNING OBJECTIVE, AND COURSE OUTCOMES (COs)

SEMESTER - I

Course Code	Course Title	Credit Distribution (hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	Total
ABS6101	Advanced Biostatistics & Research Methodology	3	1	-	-	4	30	70	100
PTH6001	Principles of Physiotherapy Practice	1	2	-	-	3	100	-	100
PTH6003	Clinical Practice in Physiotherapy	-	-	-	36	12	100	-	100
PTH6370	Research Proposal in Geriatrics	-	-	4	-	2	100	-	100
Total		4	3	4	36	21	330	70	400

Note: ABS6101 will be conducted for 50 marks and normalized to 70 marks

SEMESTER - II

Course Code	Course Title	Credit Distribution (hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	Total
EPG6201	Ethics and Pedagogy	1	1	-	-	2	100	-	100
PTH6302	Foundations of Physiotherapy in Geriatrics	1	2	-	-	3	50	50	100
PTH6304	Clinical Practice in Physiotherapy for Geriatrics- I	-	-	-	36	12	100	-	100
PTH6380	Research Progress in Geriatrics- I	-	-	4	-	2	100	-	100
Total		2	3	4	36	19	350	50	400

Note: PTH6302 will be conducted for 100 marks and normalized to 50 marks

SEMESTER - III

Course Code	Course Title	Credit Distribution (hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	Total
PTH7301	Physiotherapy in General Geriatrics	1	2	-	-	3	50	50	100
PTH7303	Clinical Practice in Physiotherapy for Geriatrics- II	-	-	-	36	12	50	50	100
PTH7305	Evidence based Physiotherapy practice in Geriatrics	1	1	-	-	2	100	-	100
PTH7370	Research Progress in Geriatrics- II	-	-	6	-	3	100	-	100
Total		2	3	6	36	20	300	100	400
Note: PTH7301 will be conducted for 100 marks and normalized to 50 marks PTH7303 will be conducted for 100 marks and normalized to 50 marks									

**SEMESTER- IV
Program Elective**

The student may choose from any one option from the list of Program Elective combinations provided in the table below

OPTION 1: Elective in Healthy Aging

Course Code	Course Title	Credit Distribution (hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	Total
PTH7312	Physiotherapy in Healthy Aging	1	2	-	-	3	50	50	100
PTH7314	Clinical Practice in Physiotherapy for Healthy Aging	-	-	-	36	12	50	50	100
PTH7380	Research Project in Geriatrics	-	-	10	-	5	50	50	100
Total		1	2	10	36	20	150	150	300
Note: PTH7312 will be conducted for 100 marks and normalized to 50 marks PTH7314 will be conducted for 100 marks and normalized to 50 marks									

OPTION 2: Elective in Aging and Disease

Course Code	Course Title	Credit Distribution (hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	Total
PTH7322	Physiotherapy in Aging and Disease	1	2	-	-	3	50	50	100
PTH7324	Clinical Practice in Physiotherapy for Aging and Disease	-	-	-	36	12	50	50	100
PTH7380	Research Project in Geriatrics	-	-	10	-	5	50	50	100
Total		1	2	10	36	20	150	150	300
<p>Note: PTH7322 will be conducted for 100 marks and normalized to 50 marks PTH7324 will be conducted for 100 marks and normalized to 50 marks</p>									

OVERALL CREDIT DISTRIBUTION

Semester	Credit distribution					Marks Distribution		
	L	T	P	CL	CR	IAC	ESE	Total
I - SEMESTER	4	3	4	36	21	330	70	400
II - SEMESTER	2	3	4	36	19	350	50	400
III - SEMESTER	2	3	6	36	20	300	100	400
IV - SEMESTER	1	2	10	36	20	150	150	300
Grand Total	9	11	24	144	80	1130	370	1500

INTERNAL ASSESSMENT COMPONENT (IAC) WEIGHTAGE DISTRIBUTION

Theory		Practical		Research	
Components	%	Components	%	Components	%
Mid semester exam	50	Case presentation	50	Performance evaluation	50
Class seminar	30	Clinical performance	50	Presentation/ Report submission	50
Assignments	20				

SEMESTER - I

COURSE CODE	:	COURSE TITLE
ABS6101	:	Advanced Biostatistics & Research Methodology
PTH6001	:	Principles of Physiotherapy Practice
PTH6003	:	Clinical Practice in Physiotherapy
PTH6370	:	Research Proposal in Geriatrics

Manipal College of Health Professions								
Name of the Department	Physiotherapy							
Name of the Program	Master of Physiotherapy (Geriatrics)							
Course Title	Advanced Biostatistics & Research Methodology							
Course Code	ABS6101							
Academic Year	First							
Semester	I							
Number of Credits	04							
Course Prerequisite	Students should have basic knowledge of research and statistical tools							
Course Synopsis	This course enables the student to understand the basics of research methods and design a research protocol for their research question. Additionally the course also enables the student to estimate sample size for their study, use statistical tests to analyse the results of the study and make meaningful interpretations.							
Course Outcomes (COs): At the end of the course student shall be able to:								
CO1	Define the terms related to statistics and research methods (C1)							
CO2	List and explain the research designs and sampling techniques (C2)							
CO3	Explain, calculate and interpret the measures of central tendency (C4)							
CO4	Determine sample size for the studies using means and proportions formula (C5)							
CO5	Analyse and interpret the outputs of parametric and non-parametric tests (C4)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs):								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	x							
CO2	x					x		
CO3	x							
CO4	x						x	
CO5	x							

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1	1. Define statistics (C1) 2. List the uses of statistics in health science research. (C1) 3. Explain the role of Statistics in clinical and preventive Medicine. (C2) 4. Differentiate qualitative and quantitative variables with examples. (C3)	4

Content	Competencies	Number of Hours
	5. Differentiate discrete and continuous variables with examples. (C4) 6. List the properties of various scales of measurement with example. (C1) 7. Define central tendency, measure of central tendency. (C1) 8. Define arithmetic mean, median and mode. List the properties, situation for use, and examples. (C1) 9. Determine the three measures from raw data. (C5)	
Unit 2		
	1. Define and calculate quartiles and percentiles. (C4) 2. Define measures of dispersion (C1) 3. Define, calculate and interpret range, quartile deviation, interquartile range, standard deviation, variance and coefficient of variation.(C4) 4. Give the situation for the use of these measures (C2).	4
	1. Describe the properties of Normal and Standard Normal Distribution with sketch (C2) 2. List the applications.(C1) 3. Calculate probabilities recollecting the coverage of the intervals $\text{mean} \pm \text{SD}$, $\text{mean} \pm 2\text{SD}$, $\text{mean} \pm 3\text{SD}$ (C4) 4. Define skewness and list the characteristics with sketch.(C1) 5. Define kurtosis and list the characteristics with sketch.(C1) 6. Define and differentiate parameter and statistic with examples (C4). 7. Define the basic terms-population, sample, sampling, parameter, statistic, estimate and estimator. (C1) 8. Define Point estimate (C1) 9. Define and Differentiate standard deviation and standard error (C4) 10. Define sampling distribution (C1) 11. Describe the importance of sampling distributions of different statistics.(C2) 12. Determine the sampling distribution of sample mean, sample proportion, difference between two means, difference between two proportions (Large sample approximation (CLT)).(C5) 13. Calculate the standard error of mean, proportion, difference between two means, and difference between two proportions. (Large sample approximation (CLT)).(C4)	5
	1. Construct and interpret confidence interval for mean, difference between two means, proportion, difference between two proportions (large sample approximation) (C5)	3

Content	Competencies	Number of Hours
Unit 3		
	<ol style="list-style-type: none"> Define /explain with example the concept of null hypothesis, alternative hypothesis, type I and type II errors. (C2) Define level of significance, power of the test and p-value (C1) Explain the difference between one sided and two-sided test (C2) Give the situation for non-parametric tests. (C2) List the differences, merits and demerits of non-parametric over parametric tests. (C1) 	4
	<ol style="list-style-type: none"> Explain the situation, hypothesis tested, assumptions and example for paired and unpaired t-test. (C2) Interpret the output of paired and unpaired t-test (C4) Explain the situation, hypothesis tested, assumptions and example for one-way and repeated measures ANOVA (C2) 	3
	<ol style="list-style-type: none"> Explain the situation, hypothesis tested, assumptions and example for : Mann-Whitney U-test, Wilcoxon signed rank test, Kruskal-Wallis ANOVA and Friedman's ANOVA (C2) Explain the situation, hypothesis tested, assumptions and example for Chi square test association/independence and McNemar's test for association (C2) Computation and interpretation of chi-square test (2 x2 table) and McNemar's test result (C2) 	4
	<ol style="list-style-type: none"> Give example for positive and negative correlations. (C2) Explain different types of correlation with the help of scatter diagrams. (C2) Give the assumptions, properties, and interpretation of correlation coefficient.(C4) Explain the situation for the computation of Pearson's and Spearman's correlation coefficient. (C2) Interpret coefficient of determination.(C4) Explain the situation, example, application and assumptions for linear and multiple regression.(C2) Interpret regression coefficients in simple and multiple regression.(C4) Explain the need for sample size computation.(C2) Given the situation/ingredients, should be able to determine sample size for estimating mean and proportion, testing of difference in means and proportions of two groups.(C5) 	4
	<ol style="list-style-type: none"> Explain the difference between rate, ratio, and proportion with example. (C2) 	3

Content	Competencies	Number of Hours
	2. Calculate rate, ratio, and proportion (C4) 3. Define and calculate Incidence and prevalence rates.(C4) 4. Explain the design, merits and demerits of Case report, case series analysis, prevalence studies and ecological studies with example (C2)	
	1. Explain the design, analysis (2x2 table and odds ratio), merits and demerits ((unmatched and 1:1 matched design) of case control study with example.(C2) 2. Explain the design, analysis (2x2 table and relative risk), merits and demerits of cohort study with example.(C2)	3
	1. Explain confounding with example. (C2) 2. List the methods to deal with confounding at design and analysis stage.(C1) 3. Explain the design, analysis, merits and demerits of RCT with example. (C2) 4. Explain the need of simple, block and stratified randomization with example.(C2) 5. Explain the need and type of blinding with example (C2)	4
	1. Explain the situation for the use of logistic regression and survival analysis with example.(C2)	3
	1. Define Population, sample, sampling, and sampling frame. Give one example each.(C1) 2. List the characteristics of a good sample.(C1) 3. Differentiate and list the advantages and disadvantages of random and non- random sampling techniques.(C4) 4. Explain simple, stratified, systematic, cluster and multistage random sampling techniques with examples. List the merits and demerits of each of them.(C2) 5. Explain Convenience, quota, judgment and snowball sampling with examples. List the merits and demerits of each of them.(C2) 6. Explain the difference between sampling and non-sampling errors. Give example for sampling and non-sampling errors. List the methods to minimize these errors.(C2)	4
	1. Define Sensitivity, specificity, PPV and NPV. (C1) 2. Explain with example method of computation and interpretation. (C4) 3. Explain with example, the situation for the application of Bland Altman plot, Kappa statistic. (C2) 4. Explain the interpretation of Kappa Statistics. (C2) 5. Explain the format of various research documents. (C2)	4
Total		52

Learning Strategies, Contact Hours and Student Learning Time (SLT)					
Learning Strategies	Contact Hours	Student Learning Time (SLT)			
Lecture	42	84			
Tutorial	4	8			
Self-directed learning (SDL)	6	12			
Total	52	104			
Assessment Methods					
Formative			Summative		
Assignments/Presentations/Quiz			Mid Semester Exam		
			End Semester Exam		
Mapping of Assessment with COs					
Nature of Assessment	CO1	CO2	CO3	CO4	CO5
Mid Semester Examination	x	x	x		
Quiz / Assignment				x	x
End Semester Exam	x	x	x	x	x
Feedback Process	Mid-Semester Feedback				
	End-Semester Feedback				
Main Reference	<ol style="list-style-type: none"> 1. Research for Physiotherapists: Project Design and Analysis –Caroline Hicks. (1995) 2. Tests, Measurements and Research in Behavioural Sciences by A K Singh (1986) 3. Rehabilitation Research - E-Book: Principles and Applications by Russell Carter, Jay Lubinsky, et al. (2015) 4. Foundations of Clinical Research by Leslie Gross Portney (2020) 5. Essentials of Research Methodology for all Physiotherapy and Allied Health Sciences Students by Ramalingam Thangamani A (2018) 				

Manipal College of Health Professions								
Name of the Department	Physiotherapy							
Name of the Program	Master of Physiotherapy (Geriatrics)							
Course Title	Principles of Physiotherapy Practice							
Course Code	PTH6001							
Academic Year	First							
Semester	I							
Number of Credits	03							
Course Prerequisite	Students should have basic knowledge and skills in physiotherapy practice							
Course Synopsis	The course will provide information about principles of evaluation and management of people with musculoskeletal, neurological, cardiorespiratory, paediatric, women health and geriatric disorders to apply basic and applied sciences in the evaluation and management. This course will also help the students to gain insights regarding standards of physiotherapy practice in the institution and community healthcare settings. This course will be delivered in the form of lectures, tutorials, and self-directed learning. Theory examination will be used to assess the students' transferable skills and the learning outcomes.							
Course Outcomes (COs)								
At the end of the course student shall be able to:								
CO1	Outline the guidelines for standards of physiotherapy practice (C4)							
CO2	Explain disability, models of disability and disability evaluation (C4)							
CO3	Explain the biomechanics, physiology and control of human movement (C4)							
CO4	Outline the principles of physiotherapy evaluation and treatment in various diseases and disorders relevant to physiotherapy practice (C4)							
CO5	Explain the process of clinical reasoning and decision making in physiotherapy practice (C4)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	x							x
CO2	x							
CO3	x							
CO4	x					x		
CO5	x					x		

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Standards of physiotherapy practice	1. Outline the national and international guidelines for standards of physiotherapy practice (C4) 2. Explain the role of entrepreneurship, leadership and innovation in physiotherapy practice (C4)	01
Unit 2		
Disability and evaluation	1. Explain disability (C4) 2. Distinguish between different models of disability (C4) 3. Explain disability evaluation (C4)	02
Unit 3		
Development of Posture and Movement across life span	1. Explain the development of postural control across life span (C4) 2. Explain the development of movement across life span (C4) 3. Explain the development and maturation of reflexes (C4)	02
Unit 4		
Biomechanics	1. Outline the biomechanics of TMJ, Joints of Thorax, Spine and Pelvis, Joints of Upper and Lower Extremity (C4)	01
Unit 5		
Exercise Physiology	1. Explain the acute responses and chronic adaptations to exercise (C4) 2. Explain the principles of exercise testing and prescription (C2)	03
Unit 6		
Pain	1. Explain the physiology of pain (C4) 2. Distinguish between different mechanisms of pain control (C4) 3. Categorize the strategies of pain management (C4)	01
Unit 7		
Neurophysiology of balance, coordination and locomotion	1. Explain the neurophysiology of balance and coordination (C4) 2. Explain the neurophysiology of locomotion (C4)	02

Content	Competencies	Number of Hours
Unit 8		
Theories of Motor control and Motor Learning	1.Explain motor control (C4) 2.Compare and contrast between different theories of Motor control (C4) 3.Explain motor learning and theories of Motor Learning (C4)	02
Unit 9		
Principles of physiotherapy evaluation	1.Outline the principles of musculoskeletal, neurological, and cardiopulmonary evaluation (C4) 2.Outline the special considerations for physiotherapy evaluation in children, women and older adults (C4) 3.Outline the evaluation protocols for physical fitness (C4) 4.Explain the principles of diabetic foot examination (C4)	08
Unit 10		
Gait	1.Distinguish between normal and pathological gait (C4) 2.Explain the methods of gait analysis (C4)	01
Unit 11		
Principles and applications of Electrodiagnosis	1.List the electrodiagnostic methods (C4) 2.Explain the principles of electrodiagnostic testing methods (C4) 3.Outline the clinical applications of electrodiagnostic methods (C4)	01
Unit 12		
Outcome Measures in Physiotherapy	1.Categorize the outcome measures based on Impairment, activity and participation domains of ICF (C4) 2.Explain the psychometric properties of commonly used outcome measures (C4) 3.Explain the method of administration and interpretation of commonly used outcome measures (C4)	03
Unit 13		
Clinical investigations relevant to Physiotherapy practice	1.Choose the clinical investigations relevant to Physiotherapy practice (C3): Imaging; Biochemical; Electrophysiological; and systemic functional tests 2.Interpret the findings in clinical investigations relevant to Physiotherapy practice (C2)	02

Content	Competencies	Number of Hours
Unit 14		
Physiotherapy treatment approaches	1.Outline the principles of physiotherapy treatment approaches including manual therapy, neurological, paediatric and cardiopulmonary rehabilitation (C4)	02
Unit 15		
Therapeutic electrophysical agents	1.Categorize therapeutic electrophysical agents (C4) 2.Explain the physiological and therapeutic uses, applications and rationale of electrophysical agents (C4)	01
Unit 16		
Community Based Rehabilitation	1.Explain the principles of Community Based Rehabilitation (C4)	01
Unit 17		
Clinical Reasoning / clinical decision making in physiotherapy practice	1.Outline the models of clinical reasoning (C2) 2.Explain the processes involved in clinical decision making (C2) 3.Explain the principles of evidence based practice in physiotherapy (C2)	02
Unit 18		
Universal Precautions	1.Apply the universal precautions for infection control in physiotherapy practice (C3)	01
Unit 19		
Wound care	1.Explain the principles of tissue healing & physiotherapy assessment and management for wound care (C4)	01
Unit 20		
Prosthetics and Orthotics	1.Explain the principles of prosthetic and orthotic prescription (C4) 2.List the types, uses, advantages and disadvantages of upper limb, lower limb and spinal orthosis and prosthesis (C4)	02
Total		39

Learning Strategies, Contact Hours and Student Learning Time (SLT)					
Learning Strategies	Contact Hours	Student Learning Time (SLT)			
Lecture	13	26			
Seminar	26	52			
Total	39	78			
Assessment Methods					
Formative		Summative			
Presentations		Sessional Exam (Theory)			
Mapping of Assessment with COs					
Nature of Assessment	CO1	CO2	CO3	CO4	CO5
Sessional Examination	x	x	x	x	x
Assignments/Presentations	x	x	x	x	x
Feedback Process	Mid-Semester Feedback				
	End-Semester Feedback				
Main Reference	<ol style="list-style-type: none"> 1. Albrecht GL, Seelman KD, Bury M, editors. Handbook of disability studies. Sage Publications; 2001 May 24. 2. Bélanger AY. Therapeutic electrophysical agents: evidence behind practice. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2010. 3. Boissonnault WG, editor. Examination in physical therapy practice: screening for medical disease. New York, NY: Churchill Livingstone; 1995 Jun. 4. Braddom's Physical Medicine and Rehabilitation by Cifu David X et al; 5th Ed, Elsevier (2016) 5. Brandt Jr EN, Pope AM. Models of disability and rehabilitation. 6. Cech DJ, Martin ST. Functional movement development across the life span. Elsevier Health Sciences; 2002 Mar 29. 7. Dittmar SS, Gresham GE, editors. Functional assessment and outcome measures for the rehabilitation health professional. Aspen Pub; 1997. 8. Enderby P, John A, Petheram B. Therapy outcome measures for rehabilitation professionals: speech and language therapy, physiotherapy, occupational therapy. John Wiley & Sons; 2013 May 31. 9. Essentials of Exercise Physiology by William McArdle et al; Wolters Kluwer Health Inc (2016) 10. Exercise Physiology: Energy, Nutrition and Human Performance by William McArdle, Frank I. Katch, Victor K. Katch; 7th edition (2010) 11. Hausdorff JM, Alexander NB, editors. Gait disorders: evaluation and management. Taylor & Francis US; 2005 Jul 15. 12. Haywood K, Getchell N. Life Span Motor Development 6th Edition. Human Kinetics; 2014 Jul 21. 				

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14. Magee DJ. Orthopedic physical assessment. Elsevier Health Sciences; 2014.
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27. Woollacott MH, Shumway-Cook A. Changes in posture control across the life span—a systems approach. Physical therapy. 1990 Dec 1;70(12):799-807.
28. World Confederation for Physical Therapy. WCPT guideline for standards of physical therapy practice.
29. Related scientific publications

NOTE: this is not an exhaustive list of references and there will be other textbooks and articles which should be referenced as well

Manipal College of Health Professions								
Name of the Department	Physiotherapy							
Name of the Program	Master of Physiotherapy (Geriatrics)							
Course Title	Clinical Practice in Physiotherapy							
Course Code	PTH6003							
Academic Year	First							
Semester	I							
Number of Credits	12							
Course Prerequisite	Students should have basic knowledge and skills in physiotherapy practice							
Course Synopsis	<p>The course will provide information about principles of evaluation and management of people with musculoskeletal, neurological, cardiorespiratory, paediatric, women health and geriatric disorders to apply basic and applied sciences in the evaluation and management. This course will also help the students to gain insights regarding standards of physiotherapy practice in the institution and community healthcare settings. This course will be delivered in the form of practical demonstrations, tutorials, self-directed learning, problem based learning and case based learning. Practical examination will be used to assess the students' transferable skills and the learning outcomes.</p>							
Course Outcomes (COs)								
At the end of the course student shall be able to:								
CO1	Perform physiotherapy assessment and evaluation in people with diseases and disorders (C4, P4, A2)							
CO2	Perform physiotherapy techniques in people with diseases and disorders to improve health and wellbeing (C4, P4, A2)							
CO3	Recognize and relate the processes involved in clinical decision making in physiotherapy evaluation and treatment (C4, P1, A1)							
CO4	Follow ethical and professional behavior (Autonomy, beneficence, justice) during clinical practice and demonstrates the ability to work as a team (A3)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		X		X				
CO2		X		X				
CO3		X				X		
CO4		X		X				

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Physiotherapy evaluation in clinical practice	<ol style="list-style-type: none"> 1. Perform musculoskeletal, neurological, and cardiopulmonary physiotherapy evaluation (C4, P4, A2) 2. Explain the special considerations for physiotherapy evaluation in children, women and older adults and display the assessment techniques (C4, P3, A1) 3. Explain the evaluation protocols for physical fitness and measure physical fitness (C4, P3, A1) 4. Explain and demonstrate the components of diabetic foot examination (C4, P2, A1) 5. Explain the methods of analysis and perform posture, balance and gait evaluation (C4, P4, A1) 6. Examine pain and perform pain assessment (C4, P4, A2) 7. Explain and demonstrate the components of physiotherapy assessment in wound care (C4, P2, A1) 8. Choose the outcome measures based on Impairment, activity and participation domains of ICF in the clinical practice (C4, P1, A1) 9. Discuss and display the method of administration of the commonly used outcome measures and interpret it (C4, P3, A1) 10. Choose the clinical investigations relevant to Physiotherapy practice (C3, P1, A1): Imaging; Biochemical; Electrophysiological; and systemic functional tests 11. Identify and interpret the findings in clinical investigations relevant to Physiotherapy practice (C2, P1, A1) 12. Recognize and relate the processes involved in clinical decision making in physiotherapy evaluation (C4, P1, A1) 13. Explain health related information with clients, caregivers, peers and health care professionals and demonstrates the ability to work as a team during evaluation (C4, P5, A3) 	234

Content	Competencies	Number of Hours
	14. Demonstrate ethical and professional behavior (Autonomy, beneficence, justice) during physiotherapy evaluation (A3)	
Unit 2		
Physiotherapy management in clinical practice	<ol style="list-style-type: none"> 1. Perform physiotherapy techniques in clinical practice including musculoskeletal, neurological, and cardiopulmonary rehabilitation (C4, P4, A2) 2. Explain the special considerations for physiotherapy management in children, women and older adults and display the treatment techniques (C4, P3, A1) 3. Explain the protocols for maintaining and improving physical fitness (C4, P2, A1) 4. Explain the principles of diabetic foot management (C4, P2, A1) 5. Explain the principles of posture, balance and gait rehabilitation and perform treatment techniques to train posture, balance and gait (C4, P4, A1) 6. Categorize and perform the strategies of pain management (C4, P4, A2) 7. Display the method of application of therapeutic electrophysical agents in the clinical practice (C4, P4, A1) 8. Explain the principles of physiotherapy management in wound care (C4, P2, A1) 9. Follow the universal precautions for infection control in physiotherapy practice (C3, P3, A1) 10. Recognize and relate the processes involved in clinical decision making in physiotherapy management (C4, P1, A1) 11. Explain health related information with clients, caregivers, peers and health care professionals and demonstrates the ability to work as a team during treatment (C4, P5, A3) 12. Demonstrate ethical and professional behavior (Autonomy, beneficence, justice) during treatment (A3) 	234
Total		468

Learning Strategies, Contact Hours and Student Learning Time (SLT)				
Learning Strategies	Contact Hours	Student Learning Time (SLT)		
Self-directed learning (SDL)	36	72		
Case Based Learning (CBL)	28	56		
Clinic	360	-		
Practical	28	56		
Assessment	16	32		
Total	468	216		
Assessment Methods				
Formative		Summative		
Case Presentations				
Clinical Performance				
Mapping of Assessment with COs				
Nature of Assessment	CO1	CO2	CO3	CO4
Assignments/Presentations	x	x	x	
Clinical competency	x	x	x	x
Feedback Process	Mid-Semester Feedback			
	End-Semester Feedback			
Main Reference	<ol style="list-style-type: none"> 1. Albrecht GL, Seelman KD, Bury M, editors. Handbook of disability studies. Sage Publications; 2001 May 24. 2. Bélanger AY. Therapeutic electrophysical agents: evidence behind practice. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2010. 3. Boissonnault WG, editor. Examination in physical therapy practice: screening for medical disease. New York, NY: Churchill Livingstone; 1995 Jun. 4. Braddom's Physical Medicine and Rehabilitation by Cifu David X et al; 5th Ed, Elsevier (2016) 5. Brandt Jr EN, Pope AM. Models of disability and rehabilitation. 6. Cech DJ, Martin ST. Functional movement development across the life span. Elsevier Health Sciences; 2002 Mar 29. 7. Dittmar SS, Gresham GE, editors. Functional assessment and outcome measures for the rehabilitation health professional. Aspen Pub; 1997. 8. Enderby P, John A, Petheram B. Therapy outcome measures for rehabilitation professionals: speech and language therapy, physiotherapy, occupational therapy. John Wiley & Sons; 2013 May 31. 9. Essentials of Exercise Physiology by William McArdle et al; Wolters Kluwer Health Inc (2016) 10. Exercise Physiology: Energy, Nutrition and Human Performance by William McArdle, Frank I. Katch, Victor 			

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 12. Haywood K, Getchell N. Life Span Motor Development 6th Edition. Human Kinetics; 2014 Jul 21.
 13. Levangie PK, Norkin CC. Joint structure and function: a comprehensive analysis. FA Davis; 2011.
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 15. McMahon SB, Koltzenburg M, Tracey I, Turk D. Wall & Melzack's Textbook of Pain E-Book. Elsevier Health Sciences; 2013.
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 18. Neumann DA. Kinesiology of the Musculoskeletal System- E-Book: Foundations for Rehabilitation. Elsevier Health Sciences; 2013.
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 20. O'Sullivan SB, Schmitz TJ, Fulk G. Physical rehabilitation. FA Davis; 2013 Jul 23.
 21. Perry J. Gait analysis. Normal and pathological function. 2010:19-47.
 22. Shumway-Cook A, Woollacott MH. Motor control: translating research into clinical practice. Lippincott Williams & Wilkins; 2007.
 23. Shurr DG, Michael JW, Cook TM. Prosthetics and orthotics. Upper Saddle River: Prentice Hall; 2002.
 24. Siegelbaum SA, Hudspeth AJ. Principles of neural science. Kandel ER, Schwartz JH, Jessell TM, editors. New York: McGraw-hill; 2000 Jan.
 25. Uustal H. Prosthetics and orthotics. In Essential Physical Medicine and Rehabilitation 2006 (pp. 101-118). Humana Press.
 26. Wadsworth H, Chanmugam AP. Electrophysical agents in physiotherapy: therapeutic & diagnostic use. Science Press; 1983.
 27. Woollacott MH, Shumway-Cook A. Changes in posture control across the life span—a systems approach. Physical therapy. 1990 Dec 1;70(12):799-807.
 28. World Confederation for Physical Therapy. WCPT guideline for standards of physical therapy practice.
 29. Related scientific publications

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Manipal College of Health Professions								
Name of the Department	Physiotherapy							
Name of the Program	Master of Physiotherapy (Geriatrics)							
Course Title	Research Proposal in Geriatrics							
Course Code	PTH6370							
Academic Year	First							
Semester	I							
Number of Credits	02							
Course Prerequisite	Students should have basic knowledge in research methodology							
Course Synopsis	The course is designed to have the student understand the nuances in developing and presenting a research protocol. It will facilitate the student to inculcate skills essential to the identification of a research gap of clinical relevance through a systematic literature search. This course will facilitate the application of research methodology towards the development of a research plan and the use of appropriate outcomes to prove the hypothesis. The course will also equip the student with the knowledge on scientific approvals required prior to initiation of the study in accordance to current regulations for the conduct of the research project							
Course Outcomes (COs)								
At the end of the course student shall be able to:								
CO1	Demonstrate literature search and develop need for the study (C5,P5)							
CO2	Prepare a research proposal and justifies its rationale (C5, P4, A3)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	x	x						
CO2		x			x			

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Formulation of research question	1. Prepare search strategy and demonstrate Literature Search (C5,P5) 2. Critically appraise the literature ,Identify research gap and need for the study (C3, P4)	10

Content	Competencies	Number of Hours
Unit 2		
Method selection	1. Choose appropriate study design for the research question (C5,P1) 2. Organize procedural steps for implementing the study (C3, P4)	08
Unit 3		
Outcome measures	1. Choose appropriate outcome measure based on research question and psychometric properties (C5, P1) 2. Comply with the process of obtaining permission to use outcome measures from sources/ developers (A2)	08
Unit 4		
Research proposal document	2. Prepare a research proposal document (P4) 3. Choose appropriate statistical tools and tests (C5)	13
Unit 5		
Scientific Approvals	3. Proposes research protocol to relevant scientific committee(s) (P5, A3) 4. Justifies the need and rationale for the study to the committee (C5,P4, A3)	13
Total		52

Learning Strategies, Contact Hours and Student Learning Time (SLT)		
Learning Strategies	Contact Hours	Student Learning Time (SLT)
Small Group Discussion (SGD)	06	12
Self-directed learning (SDL)	42	-
Assessment	04	08
Total	52	20
Assessment Methods		
Formative	Summative	
Research progress and conduct		
Presentations		
Mapping of Assessment with COs		
Nature of Assessment	CO1	CO2
Viva	x	x
Presentations	x	x
Clinical/Practical Log Book/ Record Book	x	x
Feedback Process	Mid-Semester Feedback	
	End-Semester Feedback	

Main References

- Research for Physiotherapists: Project Design and Analysis –Caroline Hicks.
- Foundations of Clinical Research by Leslie Gross Portney
- Tests, Measurements and Research in Behavioural Sciences by A K Singh
- Physical Therapy Research: Principles and Applications by Elizabeth Domholdt
- Rehabilitation Research - E-Book: Principles and Applications by Russell Carter, Jay Lubinsky, et al.
- Essentials of Research Methodology for all Physiotherapy and Allied Health Sciences Students by Ramalingam Thangamani A

NOTE: this is not an exhaustive list of references and there will be other textbooks and articles which should be referenced as well

SEMESTER - II

COURSE CODE	:	COURSE TITLE
EPG6201	:	Ethics and Pedagogy
PTH6302	:	Foundations of Physiotherapy in Geriatrics
PTH6304	:	Clinical Practice in Physiotherapy for Geriatrics - I
PTH6380	:	Research Progress in Geriatrics - I

Manipal College of Health Professions								
Name of the Department		Physiotherapy						
Name of the Program		Master of Physiotherapy (Geriatrics)						
Course Title		Ethics and Pedagogy						
Course Code		EPG6201						
Academic Year		First						
Semester		II						
Number of Credits		02						
Course Prerequisite		NIL						
Course Synopsis		<p>The ethics module will help the post graduate students in understanding the ethical principles, identifying the ethical issues and resolving ethical dilemmas in their professional practice with specific focus on clinical and research ethics.</p> <p>The pedagogy of the module will help the post graduate students in understanding the educational philosophy, teaching learning methods and learners' assessment. This module will be delivered in the form of didactic lectures in workshop format and small group learning tutorials, seminars, demonstrations during practical sessions, problem based learning & self-directed learning. Theory examination, assignments and demonstrations will be used to assess the student's transferable skills and learning outcomes.</p>						
Course Outcomes (COs):								
At the end of the course student shall be able to:								
CO1	Apply ethical principles in clinical and research practice (C3)							
CO2	Analyse ethical issues and resolve ethical dilemmas (C4)							
CO3	Integrate principles of adult learning and various roles of teacher in their academic practice (C2)							
CO4	Apply various teaching learning methods (C3, P4)							
CO5	Assess students' achievements based on learning outcomes (C3)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	x			x				
CO2	x			x				
CO3	x			x				
CO4	x	x						
CO5	x			x				

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1: Ethics		
<p>Principles of ethics History and evolution of ethics - Helsinki declaration; Nuremberg Code; Principles of ethics and its importance - Autonomy, Beneficence, Non-maleficence, Justice</p>	<ol style="list-style-type: none"> 1. Outline the history and evolution of bioethics (C2) 2. Explain the cardinal principles of bioethics (C2) 3. Apply national and international bioethical principles (C3) 	2
<p>Ethics in professional practice Principles of practice in respective profession. Privacy, confidentiality, shared decision making, informed consent, equality and equity, justice</p>	<ol style="list-style-type: none"> 1. Outline the principles of ethics in professional practice - clinical, research, academics, administrative domains (C2) 2. Apply the principles of ethics in professional practice (C3) 	
<p>ICMR Guidelines General principles, Responsible conduct of research, Risk benefit assessment</p>	<ol style="list-style-type: none"> 1. Outline the general principles of ethics for conduct of research based on ICMR guidelines (C2) 2. Summarize the characteristics for responsible conduct of research (C2) 3. Identify potential ethical issues based on risk benefit analysis (C3) 	3
<p>Informed Consent Process Components of informed consent document, Procedure in obtaining informed consent, Special situations, waivers, and proxy consent</p>	<ol style="list-style-type: none"> 1. Explain the components and procedures of informed consent process (C2) 2. Apply suitable methods in obtaining informed consent (C3) 3. Distinguish special considerations of informed consent process for waivers and proxy consent (C4) 	
<p>Roles and Responsibilities of IEC Ethical Review process, Classification of projects for review, Roles and responsibilities of members, Communications with investigators and authorities</p>	<ol style="list-style-type: none"> 1. Outline the process of ethical review of research proposals (C2) 2. Relate the types of review based on the research project proposals (C2) 3. Summarize the roles and responsibilities of IEC and its members (C2) 4. Organize the mock ethical review meeting (C3) and 	2

Content	Competencies	Number of Hours
	examine the research proposal for ethical issues (C4)	
Ethics in Special and Vulnerable Populations Types of Vulnerability and vulnerable population, Challenges for research in vulnerable population, Guidelines for research in special and vulnerable population	1. Define and explain the types of Vulnerability (C2) 2. Outline the characteristics of special and vulnerable population (C2) 3. Summarize the challenges for research in vulnerable population (C2) 4. Apply the ICMR guidelines for research in special and vulnerable population (C3)	2
Conflict of Interest Definition and Types of Conflict of Interest, Identifying, mitigating and managing Conflict of Interest, Conflicts of interest in international collaborations	1. Define and explain the types of Conflict of Interest (C2) 2. Identify and solve potential Conflict of Interest (C3)	3
Publication Ethics Importance of publishing, Authorship guidelines according to ICMJE, Plagiarism	1. List the importance of publishing scholarly works (C4) 2. Examine the criteria of authorship based on ICMJE guidelines (C4) 3. Test the publication for plagiarism (C4)	
Unit 2: Pedagogy		
Principles of adult learning Systems approach in education; Curriculum - Definition, Components, Types of Curriculum (Outcomes-based, Competency-based, Performance-based, Objectives-based), Curricular alignment, Integrated Curriculum, Frameworks, Models (Harden's SPICES model) and approaches (problems-based learning, case-based learning).	1. Relate 'Systems Approach' in education (C2) 2. Define and explain the components of curriculum (C2) 3. Outline the types of curricular frameworks (C2) 4. Identify the characteristics of curricular frameworks (C3)	2
Taxonomy of learning Blooms Taxonomy: Knowledge, Psychomotor and Affective domains, Specific Learning Objectives - Elements,	1. Classify domains of learning (C2) 2. Distinguish the levels of mastery for each learning domains (C4)	2

Content	Competencies	Number of Hours
construction, mapping of SLOs to course outcomes.	3. Outline the elements of specific learning objectives (C3) 4. Organize specific learning objectives based on domains of learning (C3)	
Teaching Methods Small Group Teaching: Group dynamics, Categories of SGT, Facilitating techniques, Generic & Specific SGT methods Large Group Teaching: Lectures	1. Outline small group teaching methods (C3) 2. Explain the generic and specific methods of small group teaching (C3) 3. Outline large group teaching methods (C3) 4. Explain the facilitation methods in large group lectures (C3) 5. Perform microteaching (P4)	5
Learner Assessment Principles, Characteristics and Types of assessment - Formative/Summative, Tools, Blueprinting	1. Outline the principles, characteristics and types of assessment (C3) 2. Identify appropriate tools for assessment. (C3) 3. Construct a blueprint of assessment for theory and practical exam (C3)	5
Total		26

Learning Strategies, Contact Hours and Student Learning Time (SLT)		
Learning Strategies	Contact Hours	Student Learning Time (SLT)
Lecture	13	26
Small group discussion (SGD)	09	18
Assignment / Microteaching	04	08
Total	26	52
Assessment Methods		
Formative	Summative	
Unit A	Unit A	
Assignments – Clinical Ethics (10); Research Ethics (10);	Session Exam: 30 MCQs = 30 marks	
Unit B	Unit B	
Assignments – Blueprinting (10)	Session Exam: 20 MCQs = 20 marks	
Presentations – Microteaching sessions (20)		

Mapping of Assessment with COs					
Nature of Assessment	CO1	CO2	CO3	CO4	CO5
Mid Semester Examination	X	X	X	X	X
Assignments/Presentations	X	X	X	X	X
Feedback Process	Mid-Semester Feedback				
	End-Semester Feedback				
Main References	<p>UNIT 1: Ethics</p> <ol style="list-style-type: none"> 1. Beauchamp and Childress, Principles of Biomedical Ethics, Fourth Edition. Oxford. 1994. 2. Patricia A Marshall. Ethical challenges in study design and informed consent for health research in resource poor settings. World Health Organization. 2007. 3. National Ethical guidelines for Biomedical and Health Research involving human participants. Indian Council of Medical Research. 2017. <p>UNIT 2: Pedagogy</p> <ol style="list-style-type: none"> 1. ABC of Learning and Teaching in Medicine. Editor(s): Peter Cantillon, Diana Wood, Sarah Yardley. Ed: 3 2. Understanding Medical Education: Evidence, Theory, and Practice, Editor(s): Tim Swanwick Kirsty Forrest Bridget C. O'Brien. Ed 3 3. Principles of Medical Education. Editor(s): Tejinder Singh, Piyush Gupta, Daljit Singh. Jaypee Brothers. 2012. NewDelhi. 				

Manipal College of Health Professions								
Name of the Department		Physiotherapy						
Name of the Program		Master of Physiotherapy (Geriatrics)						
Course Title		Foundations of Physiotherapy in Geriatrics						
Course Code		PTH6302						
Academic Year		First						
Semester		II						
Number of Credits		03						
Course Prerequisite		Students should have basic knowledge in applied anatomy, physiology and physiotherapeutic skills.						
Course Synopsis		This course is designed to enable students to understand the demography and epidemiology of aging; systemic changes in aging; geriatric pharmacology and nutrition; frailty in aging and communication strategies in aging. It will facilitate them to integrate knowledge of care in various institutions; ethics and laws; and geroscience and gerotechnology in evaluation and management of elderly and facilitate the students to apply basic and applied sciences in clinical decision making process.						
Course Outcomes (COs): At the end of the course student shall be able to:								
CO1	Explain theories of aging and physiological changes associated with aging (C4)							
CO2	Outline the comprehensive geriatric assessment and geriatric care in different settings (C4)							
CO3	Appraise evidence guiding best practice regarding exercise prescription older adults. (C5)							
CO4	Summarize the scope, values and limitations of professional practices, manage and refer appropriately (C2)							
CO5	Summarize the concepts and advances in geroscience and gerotechnology. (C2)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	x							
CO2	x		x					
CO3	x					x		
CO4	x			x				
CO5	x							

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Demography and epidemiology	<ol style="list-style-type: none"> 1. Describe the population aging trends and international comparisons (C2) 2. Explain the dynamics of health in later life (C2) 3. Summarize the economics of aging (C2) 4. Outline mortality, disease status and disability among older adults (C2) 	1
Unit 2		
Successful aging	<ol style="list-style-type: none"> 1. Define successful aging (C1) 2. Describe objective, subjective and cultural views on successful aging (C2) 3. Explain different models and predictors of successful aging (C2) 4. Outline longevity and aging (C2) 5. Apply the concepts of successful aging and describe the role of physiotherapist (C3) 	1
Unit 3		
Theories of aging	<ol style="list-style-type: none"> 1. Identify major theories of aging (C3) 2. Compare the similarities and differences between; Programmed and Unprogrammed, Biological and Psychosocial, Traditional and modern theories (C4) 3. Appraise the rationale for using theories of aging to describe the complex phenomenon of aging (C4) 4. Build a theoretical framework based on the theories of aging that will assist in clinical decision (C3) 	2
Unit 4		
Physiological changes associated with aging	<ol style="list-style-type: none"> 1. Appraise the physiological changes associated with aging (C4) 2. Relate the physiological changes to senescence (C2) 	2
Unit 5		
Aging and frailty	<ol style="list-style-type: none"> 1. Define frailty (C1) 2. Outline the causes and risk factors of frailty (C2) 3. Explain the mechanisms and detect the symptoms and measure the signs of frailty (C4) 4. Identify and relate the consequences of frailty (C3) 5. Organize the methods to modulate frailty (C3) 	4

Content	Competencies	Number of Hours
Unit 6		
Geriatric pharmacology	<ol style="list-style-type: none"> 1. Describe the magnitude of medication problem in elderly (C2) 2. Describe pharmacokinetics and pharmacodynamics in elderly (C2) 3. Appraise adverse drug reaction and mention the factors contributing to adverse drug reactions in elderly (C4) 4. Explain minimizing overdose and maximising compliance (C4) 5. Outline the implications for a physiotherapist (C4) 	2
Unit 7		
Nutrition and aging	<ol style="list-style-type: none"> 1. Identify the nutritional needs and changes with advancing years (C3) 2. Recognise and list the health consequences of under and over nutrition (C4) 3. Outline the approaches to challenge sub-optimal nutritional status (C2) 4. Explain the implications for a physiotherapist (C4) 	3
Unit 8		
Communication strategies	<ol style="list-style-type: none"> 1. Identify and report older adult's abilities, contextual factors, activity limitations, and participation restrictions impact communication during the rehabilitation process (C3) 2. Choose modified communication methods to deliver effective management for older adults (C3) 	4
Unit 9		
Interprofessional team in care of older adults	<ol style="list-style-type: none"> 1. Describe the role and identify the contributions of members of a comprehensive geriatric assessment team (C2) 	1
Unit 10		
Evaluation and assessment of elderly	<ol style="list-style-type: none"> 1. Outline comprehensive geriatric assessment (C4) 2. Explain Hypothesis Oriented Algorithm for Geriatric physiotherapist (C4) 	4
Unit 11		
Aging and Exercise	<ol style="list-style-type: none"> 1. Explain the physiology of exercise among older adults (C4) 2. Identify the risk and benefits (C3) 3. Explain different protocols for exercise 	2

Content	Competencies	Number of Hours
	evaluation (C4) 4. Appraise evidence guiding best practice regarding exercise prescription older adults. (C5) 5. Outline wellness programs for older adults in various care settings. (C4)	
Unit 12		
Documentation and delegation in various care settings	1. Take part in a variety of methods used to communicate among healthcare professionals regarding the status and well-being of older adults (C4) 2. Appraise relevant evidence guiding best practice regarding continuity of treatment across services and during transitions between care settings (C5)	1
Unit 13		
Geriatric care in various settings	1. Explain the care of community dwelling elderly (C4) 2. Explain institutionalised care of elderly- acute and long-term care setting (C4)	3
Unit 14		
Psychological and social aspects of aging	1. Explain the concepts of: (C4) a. Depression b. Role transitions c. Grief and bereavement d. Fear of death e. Fear of dying f. Substance abuse g. Ideation h. Social functioning in late life 2. Outline the implications for a physiotherapist (C4)	4
Unit 15		
Ethics and values in aging and aging services	1. Identify common ethical dilemmas in geriatrics- informed consent, decision making capacity, patient confidentiality, allocating health resources, care planning and advanced directives, end of life decisions (C3) 2. Explain the strategies for approaching and avoiding ethical dilemmas (C4)	1
Unit 16		
Laws for older adults including social security	1. Identify the role of legislation in welfare of elderly (C3) 2. Outline the rights and programs for elderly	2

Content	Competencies	Number of Hours
schemes	welfare in India (C2) 3. Explain the status of elderly welfare and protection (C2)	
Unit 17		
Geroscience and gerotechnology	1. Outline the concept of geroscience and gerotechnology (C2) 2. Summarize the advances in gerotechnology (including mhealth/ telerehab) (C2)	2
Total		39

Learning Strategies, Contact Hours and Student Learning Time (SLT)					
Learning Strategies	Contact Hours	Student Learning Time (SLT)			
Lecture	13	26			
Seminar	8	16			
Small group discussion (SGD)	12	24			
Problem Based Learning (PBL)	2	4			
Case Based Learning (CBL)	4	8			
Total	39	78			
Assessment Methods					
Formative		Summative			
Seminars/ Presentation		Mid Semester/Sessional Exam (Theory)			
		End Semester Exam (Theory)			
Mapping of Assessment with COs					
Nature of Assessment	CO1	CO2	CO3	CO4	CO5
Mid Semester / Sessional Examination 1	x	x	x		
Presentations	x	x	x	x	x
End Semester Exam	x	x	x	x	x
Feedback Process	Mid-Semester Feedback				
	End-Semester Feedback				
Main Reference	<ol style="list-style-type: none"> 1. Textbook of Geriatric Medicine and Gerontology by Fillit, Howard (8th Edition) Publisher: Clinical Key 2. Current Diagnosis and Treatment in Geriatrics by Williams, Brie A Publisher: Access Medicine(McGraw Hill) 3. Staples WH, Kegelmeyer D, Heitzman J. Geriatric physical therapy. McGraw-Hill; 2016 Mar 29. 4. Guccione AA, Avers D, Wong R. Geriatric Physical Therapy-eBook. Elsevier Health Sciences; 2011 Mar 7. 5. Centers for Disease Control and Prevention, Falls Among Older Adults: An Overview. Available at 				

	<p>http://www.cdc.gov/ncipc/factsheets/adultfalls.htm.</p> <p>6. American Geriatric Society, British Geriatrics Society, and American Academy of Orthopaedic Surgeons. Guideline for the Prevention of Falls in Older Persons. <i>J Am Geriatr Soc.</i> 2001;49:664-672.</p> <p>7. Thompson, M. FOCUS: Geriatric Physical Therapy. Balance and Motor Control. Section on Geriatrics American Physical Therapy Association; 2001</p> <p>8. Geriatrics Rehabilitation- Carole Lewis and Jennifer Bottomley</p>
Additional References	<p>1. Bradom's Physical Medicine and Rehabilitation, 5th edition, Elsevier, 2015.</p> <p>2. DeLisa's Physical Medicine and Rehabilitation, 5th edition, Lippincott Williams and Wilkins</p> <p>3. Multidisciplinary Approach to Rehabilitation- Shrawan Kumar</p> <p>4. Physical Medical and Rehabilitation- Susan B.O'Sullivan</p>

Manipal College of Health Professions								
Name of the Department		Physiotherapy						
Name of the Program		Master of Physiotherapy (Geriatrics)						
Course Title		Clinical Practice in Physiotherapy for Geriatrics- I						
Course Code		PTH6304						
Academic Year		First						
Semester		II						
Number of Credits		12						
Course Prerequisite		Students should have basic knowledge in clinical conditions affecting geriatric population and relevant physiotherapeutic skills.						
Course Synopsis		This course is designed to apply fundamental and advanced knowledge of therapeutic sciences in institutions and community based service delivery, demonstrate comprehensive geriatric assessment techniques and interpret findings. It will assist students to formulate and prescribe specific treatment plan for older adults by integrating knowledge of care in various institutions; ethics and laws; and geroscience and gerotechnology. It will facilitate students to monitor and re-evaluate treatment plans and communicate effectively in verbal and written forms with patients, their family/caregiver, peers, healthcare professionals and the stakeholders at large.						
Course Outcomes (COs):								
At the end of the course student shall be able to:								
CO1	Analyse and apply the principles of physiotherapy for comprehensive evaluation for older adults (C3, P5, A3)							
CO2	Perform physiotherapy management of older adults with or without disabilities (P5,A3)							
CO3	Demonstrate fitness testing protocols and exercise prescription for older adults (C2, P5, A3)							
CO4	Display ethical and professional behavior and demonstrate ability to work as a team (A3)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		X			X			
CO2		X				X		
CO3		X				X		
CO4			X	X				

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Comprehensive Physiotherapy assessment for older adults with or without disabilities	<ol style="list-style-type: none"> 1. Demonstrate physical examination procedures of elderly in different settings. (C2, P5, A3) 2. Choose outcome measures relevant to health conditions seen among older adults (C3, P5, A2) 3. Discuss and communicate health related information with clients, caregivers, administrators, peers and health care professionals and displays ability to work as a team (C2, P5, A3) 4. Demonstrate the clinical reasoning and decision making process for the assessment of the client (C2, P5, A3) 5. Display ethical and professional behavior (Autonomy, Beneficence and Justice) during communication and evaluation (A3) 	144
Unit 2		
Comprehensive Physiotherapy management for promoting health aging	<ol style="list-style-type: none"> 1. Demonstrate clinical reasoning and plan a comprehensive goal for the older adult based on evaluations. (C2, P5, A3) 2. Plan a comprehensive management for an older adult with disability (C2, P5, A3) 3. Plan a comprehensive health promotion protocol for an older adult without disabilities (C2, P5, A3) 4. Select, administer, and interpret psychometrically sound tests/ tools. (C2, P5, A2) 5. Demonstrate cultural sensitivity during exercise prescription and management (A4) 6. Discuss health related information with clients, caregivers, peers and health care professionals and displays ability to work as a team (C2, P5, A3) 7. Display ethical and professional behavior (Autonomy, Beneficence and Justice) during exercise prescription and management (A3) 	162
Unit 3		
Fitness testing and exercise prescription for older adults	<ol style="list-style-type: none"> 1. Apply the guidelines for fitness testing and exercise prescription for older adults (C3,P4,A3) 2. Demonstrate methods to ensure special considerations for fitness testing and exercise prescription for older adults (C2, P5, A3) 3. Discuss health related information with clients, 	162

Content	Competencies	Number of Hours
	caregivers, peers and health care professionals and displays ability to work as a team (C2, P5, A3) 4. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during fitness testing and exercise prescription for older adults (A3)	
Total		468

Learning Strategies, Contact Hours and Student Learning Time (SLT)				
Learning Strategies	Contact Hours	Student Learning Time (SLT)		
Self-directed learning (SDL)	36	72		
Case Based Learning (CBL)	28	56		
Clinic	360	-		
Practical	28	56		
Assessment	16	32		
Total	468	216		
Assessment Methods				
Formative	Summative			
Clinical Performance	-			
Case Presentation	-			
Mapping of Assessment with COs				
Nature of Assessment	CO1	CO2	CO3	CO4
Clinical Performance	x	x	x	x
Case Presentation	x	x	x	x
Feedback Process	Mid-Semester Feedback			
	End-Semester Feedback			
Main Reference	<ol style="list-style-type: none"> 1. Textbook of Geriatric Medicine and Gerontology by Fillit, Howard (8th Edition) Publisher: Clinical Key 2. Current Diagnosis and Treatment in Geriatrics by Williams, Brie A Publisher: Access Medicine(McGraw Hill) 3. Staples WH, Kegelmeyer D, Heitzman J. Geriatric physical therapy. McGraw-Hill; 2016 Mar 29. 4. Guccione AA, Avers D, Wong R. Geriatric Physical Therapy-eBook. Elsevier Health Sciences; 2011 Mar 7. 5. Centers for Disease Control and Prevention, Falls Among Older Adults: An Overview. Available at http://www.cdc.gov/ncipc/factsheets/adultfalls.htm. 6. American Geriatric Society, British Geriatrics Society, and American Academy of Orthopaedic 			

	<p>Surgeons. Guideline for the Prevention of Falls in Older Persons. J Am Geriatr Soc. 2001;49:664-672.</p> <p>7. Thompson, M. FOCUS: Geriatric Physical Therapy. Balance and Motor Control. Section on Geriatrics American Physical Therapy Association; 2001</p> <p>8. Geriatrics Rehabilitation- Carole Lewis and Jennifer Bottomley</p>
Additional References	<p>1. Bradom's Physical Medicine and Rehabilitation, 5th edition, Elsevier, 2015.</p> <p>2. DeLisa's Physical Medicine and Rehabilitation, 5th edition, Lippincott Williams and Wilkins</p> <p>3. Multidisciplinary Approach to Rehabilitation- Shrawan Kumar</p> <p>4. Physical Medical and Rehabilitation- Susan B.O'Sullivan</p>

Manipal College of Health Professions								
Name of the Department	Physiotherapy							
Name of the Program	Master of Physiotherapy (Geriatrics)							
Course Title	Research Progress in Geriatrics - I							
Course Code	PTH6380							
Academic Year	First							
Semester	II							
Number of Credits	02							
Course Prerequisite	Students should have basic knowledge in research methodology							
Course Synopsis	The course is designed to ensure the student is aware of the proper methods of data collection, monitoring and obtaining necessary documentation related to the study (i.e., informed consent). The course will facilitate certification in Good Clinical Practice to ensure research is conducted in accordance to the current regulations and requirements. The course will also motivate the student stay up-to-date with the research in the area of study through regular updates of the literature review.							
Course Outcomes (COs)								
At the end of the course student shall be able to:								
CO1	Explain and demonstrate good clinical practice during research (P5, A3)							
CO2	Demonstrate data collection procedures and document maintenance (P4, A4)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1				x		x		
CO2		x	x					
CO3								
CO4								
CO5								

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Good Clinical Practice	1. Explain components of Good Clinical Practice for conducting health related research based on ICMR guidelines (C2, P2, A1)	08
Unit 2		
Data collection	1. Perform data collection according to the procedure approved by the approval committees (P5, A3)	26

Content	Competencies	Number of Hours
Unit 3		
Document maintenance	1. Obtain, organize and store the documents relevant to the study e.g. Informed Consent document, Ethical approvals, data collection forms (P4, A4)	06
Unit 4		
Literature Review update	1. Perform literature search and update the review (P4)	12
Total		52

Learning Strategies, Contact Hours and Student Learning Time (SLT)		
Learning Strategies	Contact Hours	Student Learning Time (SLT)
Small Group Discussion (SGD)	10	20
Self-directed learning (SDL)	32	-
Practical	10	-
Total	52	20
Assessment Methods		
Formative	Summative	
Research progress and conduct		
Mapping of Assessment with COs		
Nature of Assessment	CO1	CO2
Assignments/Presentations		x
Clinical/Practical Log Book/ Record Book	x	
Feedback Process	Mid-Semester Feedback	
	End-Semester Feedback	
Main Reference	<ul style="list-style-type: none"> • Research for Physiotherapists: Project Design and Analysis – Caroline Hicks. • Foundations of Clinical Research by Leslie Gross Portney • Tests, Measurements and Research in Behavioural Sciences by A K Singh • Physical Therapy Research: Principles and Applications by Elizabeth Domholdt • Rehabilitation Research - E-Book: Principles and Applications by Russell Carter, Jay Lubinsky, et al. • Essentials of Research Methodology for all Physiotherapy and Allied Health Sciences Students by Ramalingam Thangamani A <p>NOTE: this is not an exhaustive list of references and there will be other textbooks and articles which should be referenced as well</p>	

SEMESTER - III

COURSE CODE : COURSE TITLE

PTH7301 : Physiotherapy in General Geriatrics

PTH7303 : Clinical Practice in Physiotherapy for Geriatrics - II

PTH7305 : Evidence based Physiotherapy practice in Geriatrics

PTH7370 : Research Progress in Geriatrics - II

Manipal College of Health Professions	
Name of the Department	Physiotherapy
Name of the Program	Master of Physiotherapy (Geriatrics)
Course Title	Physiotherapy in General Geriatrics
Course Code	PTH7301
Academic Year	Second
Semester	III
Number of Credits	03
Course Prerequisite	Students should have basic knowledge in applied anatomy, physiology and physiotherapeutic skills.
Course Synopsis	This course is designed to enable the students to relate known systemic changes to the clinical presentation and in the process of assessment and restorative/ compensatory management of older adults. It will help students understand comprehensive geriatric evaluation using effective outcome measures/ assessment tools and interpretation of findings in selecting treatment options and making decisions about management and where necessary referring the patient for medical specialist opinion. It will facilitate the students in planning and delivering the management using conventional and contemporary treatment approaches.

Course Outcomes (COs):

At the end of the course student shall be able to:

CO1	Identify aging work force and aging with disability. (C3)
CO2	Explain reasoning in evaluation and factors governing management and caregiving of older adults across continuum of care. (C5)
CO3	Recommend the design considerations and technology adoption to facilitate care of older adults (C5)

Mapping of Course Outcomes (COs) to Program Outcomes (POs)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	x							
CO2	x					x		
CO3	x					x		

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Mutisystem geriatric	1. Determine and integrate evidence based physiotherapy diagnosis and prognosis	2

Content	Competencies	Number of Hours
physiotherapy assessment	grounded in the International Classification of Function (ICF) model. (C5) 2. Relate aging changes across physiological systems in assessment and management. (C4)	
Unit 2		
Reasoning in patient evaluation & management	1. Appraise the models and processes of clinical reasoning in evaluation and care for older adults. (C5)	3
Unit 3		
Outcome measures in Geriatrics	1. Compare qualitative, semi-quantitative and quantitative outcome measures used in older adults (C5) 2. Choose and interpret the relevant outcome measures used in older adults (C5) 3. Interpret the findings, communicate to the healthcare team and make recommendations for comprehensive plan of care (C5)	3
Unit 4		
Quality of Life(QOL) in older adults	1. Define QOL and illustrate its dimensions & domains (C2) 2. Describe the factors influencing QOL and explain the indicators of poor QOL (C2) 3. Appraise QOL models and evidence based strategies for improving QOL (C4)	5
Unit 5		
Accessibility and older adults.	1. Outline the concept of accessibility and universal design (C2) 2. Recommend design considerations incorporating the principles of universal design (C5) 3. Describe ergonomics for aging population (C2) 4. Appraise environmental modifications for older adult (C5)	3
Unit 6		
Technology for adaptive aging	1. Compare and contrast different technology to optimize patient safety, function and independence for older adults (C4) 2. Assess technology use for older adults (C5) 3. Plan technology assisted management for older adults (C3) 4. Select appropriate technology to facilitate independence in older adults (C5) 5. Appraise the concerns with acceptance of technology (C5)	4

Content	Competencies	Number of Hours
Unit 7		
Caregiving in older adults	<ol style="list-style-type: none"> 1. Define caregivers, caregiving and caregiver burden (C1) 2. Appraise positive and negative aspects of caregiving (C5) 3. Explain the predictors of caregiver burden (C5) 4. Assess and formulate means to address caregiver burden (C5) 	4
Unit 8		
Aging work force	<ol style="list-style-type: none"> 1. Explain the demographics of aging workforce (C2) 2. Appraise the challenges faced by aging workers (C5) 3. Evaluate the impact & implications of aging workforce (C5) 4. Explain the role of physiotherapy in aging workforce (C5) 5. Construct worksite wellness programs for aging workers (C3) 	3
Unit 9		
Aging with disability	<ol style="list-style-type: none"> 1. Define aging with disability (C1) 2. Explain the demographics of aging with congenital and acquired disabilities (C2) 3. Appraise the factors affecting aging with disability (C5) 4. Explain and identify the problems of individuals aging with disability (C5) 5. Choose measures to facilitate function in individuals aging with disability (C3) 	4
Unit 10		
Physical and chemical restraints	<ol style="list-style-type: none"> 1. Define physical and chemical restraints as they relate to physical therapist practice. (C1) 2. Summarize the indications, contraindications and risks of physical and chemical restraints (C2) 3. Evaluate the impact of physical and chemical restraint use on the restrained individual, caregiver(s), and society (C5) 4. Describe alternatives to physical and chemical restraints. (C2) 	1
Unit 12		
Transitions in older adult care	<ol style="list-style-type: none"> 1. Identify the need for continuity of care and communication across the spectrum of services and during transitions between care settings (C3) 	3

Content	Competencies	Number of Hours
	2. Explain the role of information technology in transitions (C3) 3. Determine the factors influencing transitions (C5) 4. Appraise the evidence guiding best practice regarding continuity of treatment and during transitions (C5)	
Unit 13		
Palliative and supportive care and end of life care	1. Describe the process for end-of-life care (C5) 2. Discuss the steps involved in decision making in end-of-life care (C2) 3. Explain the ethical dilemmas in end of life (C5) 4. Explain management strategies in palliative care (C5) 5. Discuss the role of physiotherapist in palliative and end of life care (C5)	4
Total		39

Learning Strategies, Contact Hours and Student Learning Time (SLT)

Learning Strategies	Contact Hours	Student Learning Time (SLT)	
Lecture	13	26	
Seminar	8	16	
Small group discussion (SGD)	12	24	
Problem Based Learning (PBL)	2	4	
Case Based Learning (CBL)	4	8	
Total	39	78	
Assessment Methods			
Formative		Summative	
Seminars		Mid Semester/Sessional Exam (Theory)	
		End Semester Exam (Theory)	
Mapping of Assessment with COs:			
Nature of Assessment	CO1	CO2	CO3
Mid Semester / Sessional Examination 1	x	x	
Presentations	x	x	x
End Semester Exam	x	x	x
Feedback Process	Mid-Semester Feedback		
	End-Semester Feedback		
Main Reference	1. Textbook of Geriatric Medicine and Gerontology by Fillit, Howard (8th Edition) Publisher: Clinical Key 2. Current Diagnosis and Treatment in Geriatrics by Williams, Brie A		

	<p>Publisher: Access Medicine(McGraw Hill)</p> <ol style="list-style-type: none"> 3. Staples WH, Kegelmeyer D, Heitzman J. Geriatric physical therapy. McGraw-Hill; 2016 Mar 29. 4. Guccione AA, Avers D, Wong R. Geriatric Physical Therapy-eBook. Elsevier Health Sciences; 2011 Mar 7. 5. Centers for Disease Control and Prevention, Falls Among Older Adults: An Overview. Available at http://www.cdc.gov/ncipc/factsheets/adultfalls.htm. 6. American Geriatric Society, British Geriatrics Society, and American Academy of Orthopaedic Surgeons. Guideline for the Prevention of Falls in Older Persons. J Am Geriatr Soc. 2001;49:664-672. 7. Thompson, M. FOCUS: Geriatric Physical Therapy. Balance and Motor Control. Section on Geriatrics American Physical Therapy Association; 2001 8. National Research Council. Technology for adaptive aging. National Academies Press; 2004 Apr 25. 9. http://www.who.int/ageing/en/ 10. http://www.who.int/dietphysicalactivity/factsheet_olderadults/en/
<p>Additional References</p>	<ol style="list-style-type: none"> 1. Bradom's Physical Medicine and Rehabilitation, 5th edition, Elsevier, 2015. 2. DeLisa's Physical Medicine and Rehabilitation, 5th edition, Lippincott Williams and Wilkins 3. Multidisciplinary Approach to Rehabilitation- Shrawan Kumar 4. Physical Medical and Rehabilitation- Susan B.O'Sullivan

Manipal College of Health Professions								
Name of the Department		Physiotherapy						
Name of the Program		Master of Physiotherapy (Geriatrics)						
Course Title		Clinical Practice in Physiotherapy for Geriatrics- II						
Course Code		PTH7303						
Academic Year		Second						
Semester		III						
Number of Credits		12						
Course Prerequisite		Students should have knowledge in clinical conditions affecting geriatric population and relevant physiotherapeutic skills.						
Course Synopsis		This course is designed to enable students to apply fundamental and advanced knowledge of therapeutic sciences in institutions and community based service delivery, demonstrate comprehensive assessment techniques and interpret findings. It will assist students to formulate and prescribe specific treatment plan for older adults by integrating knowledge of care in various institutions; ethics and laws; and geroscience and gerotechnology.						
Course Outcomes (COs)								
At the end of the course student shall be able to:								
CO1	Perform physiotherapy assessment and evaluation in people with diseases and disorders (C4, P4, A2)							
CO2	Perform physiotherapy techniques in people with diseases and disorders to improve health and wellbeing (C4, P4, A2)							
CO3	Recognize and relate the processes involved in clinical decision making in physiotherapy evaluation and treatment (C4, P1, A1)							
CO4	Follow ethical and professional behavior (Autonomy, beneficence, justice) during clinical practice and demonstrates the ability to work as a team (A3)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	x	x						
CO2	x	x						
CO3		x				x		
CO4		x		x				

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Physiotherapy assessment and management in health conditions among older adults	<ol style="list-style-type: none"> 1. Perform physiotherapy assessment for age-related disorders among older adults (P5, A3) 2. Displays the ability to interpret investigations (P5) 3. Organizes problem list and plan short term and long-term goals based on the evaluation findings (P5, A3) 4. Demonstrate methods to identify impact of health conditions and aging on psychosocial domain of an older adult. (P5, A3) 5. Plan and perform Physiotherapy treatment techniques (P5, A3) 6. Apply principles of universal design to improve activity and participation among older adults (P5, A2) 7. Discuss health related information with clients, caregivers, peers, administrators and health care professionals and displays ability to work as a team (P5, A3) 8. Displays ethical and professional behavior (Autonomy, Beneficence and Justice) during assessment and treatment of clients. (A4) 	156
Unit 2		
Physiotherapy assessment and management of health conditions among Caregivers	<ol style="list-style-type: none"> 1. Perform assessment to evaluate health conditions of caregiver and burden associated with caregiving (P5, A3) 2. Analyse and apply evidence based practice in reducing caregiver burden (P5, A3) 3. Discuss health related information with clients, caregivers, peers, administrators and health care professionals and displays ability to work as a team (P5, A3) 4. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during evaluation and reducing caregiver burden (A4) 	156
Unit 3		
Physiotherapy assessment and management of health conditions in aging workforce	<ol style="list-style-type: none"> 9. Perform assessment to evaluate health conditions of workers classified under aging workforce (P5, A3) 10. Analyse and apply evidence based practice in reducing occupational health issues among aging workforce (P5, A3) 	156

Content	Competencies	Number of Hours
	11. Discuss health related information with clients, caregivers, peers, administrators and health care professionals and displays ability to work as a team (P5, A3) 12. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during evaluation and reducing occupational health issues among aging workforce (A4)	
Total		468

Learning Strategies, Contact Hours and Student Learning Time (SLT)

Learning Strategies	Contact Hours	Student Learning Time (SLT)
Self-directed learning (SDL)	36	72
Case Based Learning (CBL)	28	56
Clinic	360	-
Practical	28	56
Assessment	16	32
Total	468	216

Assessment Methods
Formative
Summative

Case presentations

End semester exam (Practical)

Clinical performance

Mapping of Assessment with COs

Nature of Assessment	CO1	CO2	CO3	CO4
Clinical Performance	x	x	x	x
Case Presentation	x	x	x	x

Feedback Process

Mid-Semester Feedback

End-Semester Feedback

Main Reference

1. Textbook of Geriatric Medicine and Gerontology by Fillit, Howard (8th Edition) Publisher: Clinical Key
2. Current Diagnosis and Treatment in Geriatrics by Williams, Brie A Publisher: Access Medicine(McGraw Hill)
3. Staples WH, Kegelmeyer D, Heitzman J. Geriatric physical therapy. McGraw-Hill; 2016 Mar 29.
4. Guccione AA, Avers D, Wong R. Geriatric Physical Therapy-eBook. Elsevier Health Sciences; 2011 Mar 7.
5. Centers for Disease Control and Prevention, Falls Among Older Adults: An Overview. Available at <http://www.cdc.gov/ncipc/factsheets/adultfalls.htm>.
6. American Geriatric Society, British Geriatrics Society, and American Academy of Orthopaedic Surgeons. Guideline for the Prevention of Falls in Older Persons. J Am Geriatr Soc.

	<p>2001;49:664-672.</p> <p>7. Thompson, M. FOCUS: Geriatric Physical Therapy. Balance and Motor Control. Section on Geriatrics American Physical Therapy Association; 2001</p> <p>8. Geriatrics Rehabilitation- Carole Lewis and Jennifer Bottomley</p>
Additional References	<p>1. Bradom's Physical Medicine and Rehabilitation, 5th edition, Elsevier, 2015.</p> <p>2. DeLisa's Physical Medicine and Rehabilitation, 5th edition, Lippincott Williams and Wilkins</p> <p>3. Multidisciplinary Approach to Rehabilitation- Shrawan Kumar</p> <p>4. Physical Medical and Rehabilitation- Susan B.O'Sullivan</p>

Manipal College of Health Professions								
Name of the Department	Physiotherapy							
Name of the Program	Master of Physiotherapy (Geriatrics)							
Course Title	Evidence based Physiotherapy practice in Geriatrics							
Course Code	PTH7305							
Academic Year	Second							
Semester	III							
Number of Credits	02							
Course Prerequisite	Students should have basic knowledge of research methods and physiotherapy practice in geriatrics.							
Course Synopsis	The course will focus on the development of skill to search for evidence, appraise the available literature and apply the relevant evidence into clinical practice for the assessment and management of various acute and chronic disorders in old age. Through this course, students will learn to summarise recent trends and developments in gerontology and geriatrics (including assessment and treatment) by reviewing the scientific literature of the last 5-10 years while emphasizing on landmark studies, high levels of evidence, on-going controversies, on-going studies, and the way forward.							
Course Outcomes (COs)								
At the end of the course student shall be able to:								
CO1	Appraise the process of evidence based practice and implementation to geriatric practice (C5)							
CO2	Appraise the process of evidence-based practice in healthy aging (C5)							
CO3	Appraise the process of evidence-based practice in aging and diseases (C5)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1						X	X	
CO2	X					X		
CO3	X					X		

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Evidence based practice	1. Define evidence-based practice (EBP) (C1) 2. Explain the process of evidence-based practice (C4) 3. Adopt a search strategy and appraise the available literature (C5)	2

Content	Competencies	Number of Hours
Unit 2		
Healthy Aging	1. Identify, appraise and summarize evidence through systematic searches of databases for the assessment and management of individuals who are aging successfully (C5) 2. Recommend strategies for implementation of evidence based practice assessment and management strategies (C5)	12
Unit 3		
Aging and diseases	1. Identify, appraise and summarize evidence through systematic searches of databases for the assessment and management of diseases related to old age (C5) 2. Recommend strategies for implementation of evidence based practice assessment and management strategies (C5)	12
Total		26

Learning Strategies, Contact Hours and Student Learning Time (SLT)

Learning Strategies	Contact Hours	Student Learning Time (SLT)
Lecture	2	4
Seminar	24	48
Total	26	52

Assessment Methods

Formative

Presentation

Summative

Sessional Exam (theory)

Mapping of Assessment with COs

Nature of Assessment	CO1	CO2	CO3
Sessional Examination	x	x	x
Assignments/Presentations	x	x	x

Feedback Process

Mid-Semester Feedback

Main Reference

1. Guide to Evidence Based Physical Therapy Practice by Dianne V Jewell; Jones and Bartlett Publishers (2008)
2. <http://www.apta.org/EvidenceResearch/EBPTools/>
3. <https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html>
4. <https://www.bmj.com/about-bmj/resources-readers/publications/how-read-paper>

Additional References

1. Young JM, Solomon MJ. How to critically appraise an article. Nat Clin Pract Gastroenterol Hepatol. 2009;6(2):82-91
2. Related scientific publications including position statements, guidelines, landmark trials, systematic reviews and meta-analysis and recent trials

Manipal College of Health Professions								
Name of the Department		Physiotherapy						
Name of the Program		Master of Physiotherapy (Geriatrics)						
Course Title		Research Progress in Geriatrics - II						
Course Code		PTH7370						
Academic Year		Second						
Semester		III						
Number of Credits		03						
Course Prerequisite		Students should have basic knowledge in research methodology						
Course Synopsis		This course is developed to introduce the student to the art of scientific writing. Students will be facilitated to complete a required certification in scientific writing during this time and will be prepared to implement the knowledge from this course into writing their research project. This course will ensure that students continue to adhere to guidelines and good clinical practice recommendations related to enrolment, data collection and storage. The course will enhance the skill of the student to keep abreast with recent developments in the area of study through periodic literature updates.						
Course Outcomes (COs)								
At the end of the course student shall be able to:								
CO1	Explain and components of scientific writing (C2, P2)							
CO2	Demonstrate data collection procedures and document maintenance (P4, A4)							
CO3	Perform literature search and update (P4)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	x	x						
CO2			x		x			
CO3		x				x		

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Basics of scientific writing	1. Explain the components of scientific writing in dissertation and manuscript (C2, P2)	08
Unit 2		
Data collection	1. Perform data collection according to the	39

Content	Competencies	Number of Hours
	procedure approved by the approval committees (P5, A3)	
Unit 3		
Document maintenance	1. Obtain, organize and store the documents relevant to the study e.g. Informed Consent document, Ethical approvals, data collection forms (P4, A4)	06
Unit 4		
Literature update	1. Perform literature search and update the review (P4)	25
Total		78

Learning Strategies, Contact Hours and Student Learning Time (SLT)			
Learning Strategies	Contact Hours	Student Learning Time (SLT)	
Small Group Discussion (SGD)	10	20	
Self-directed learning (SDL)	48	-	
Practical	20	-	
Total	78	20	
Assessment Methods			
Formative		Summative	
Research progress and conduct			
Mapping of Assessment with COs			
Nature of Assessment	CO1	CO2	CO3
Assignments/Presentations		x	
Clinical/Practical Log Book/ Record Book	x		x
Feedback Process	Mid-Semester Feedback		
	End-Semester Feedback		
Main Reference	<ul style="list-style-type: none"> • Research for Physiotherapists: Project Design and Analysis –Caroline Hicks. • Foundations of Clinical Research by Leslie Gross Portney • Tests, Measurements and Research in Behavioural Sciences by A K Singh • Physical Therapy Research: Principles and Applications by Elizabeth Domholdt • Rehabilitation Research - E-Book: Principles and Applications by Russell Carter, Jay Lubinsky, et al. • Essentials of Research Methodology for all Physiotherapy and Allied Health Sciences Students by Ramalingam Thangamani A <p>NOTE: this is not an exhaustive list of references and there will be other textbooks and articles which should be referenced as well</p>		

SEMESTER - IV

Option 1: Elective in Healthy Aging

COURSE CODE : COURSE TITLE

PTH7312 : Physiotherapy in Healthy Aging

**PTH7314 : Clinical Practice in Physiotherapy for
Healthy Aging**

PTH7380 : Research Project in Geriatrics

Manipal College of Health Professions								
Name of the Department		Physiotherapy						
Name of the Program		Master of Physiotherapy (Geriatrics)						
Course Title		Physiotherapy in Healthy Aging						
Course Code		PTH7312						
Academic Year		Second						
Semester		IV						
Number of Credits		03						
Course Prerequisite		Students should have knowledge in age related changes in structure and function of body systems and relevant physiotherapeutic skills.						
Course Synopsis		This module is designed to enable students to understand the comprehensive evaluation of elderly and facilitate the students in planning and delivering the management using conventional and modern treatment approaches. The module will also facilitate students to understand and apply the health promotion and risk mitigation strategies among older adults.						
Course Outcomes (COs):								
At the end of the course student shall be able to:								
CO1	Evaluate the evidence for screening, health promotion and maintenance, disease and injury prevention in older adults (C5)							
CO2	Explain barriers and apply methods of modification for older adults. (C3)							
CO3	Explain healthy aging initiatives. (C5)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	x					x		
CO2	x							
CO3	x						x	

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Health promotion	1. Identify, apply, and evaluate best available evidence that promote independent healthy living across domains at the individual, institutional, community and societal levels. (C5) 2. Evaluate the evidence for screening, health promotion and maintenance, disease and injury prevention among patients, clients, and	6

Content	Competencies	Number of Hours
	caregivers in a culturally appropriate manner. (C5)	
Unit 2		
Primordial and primary prevention	1. Appraise the concepts and strategies for primordial and primary prevention in older adults (C5)	5
Unit 3		
Risk mitigation in healthy aging	1. Recommend an evidence-based assessment, prevention and risk reduction programs/ strategies for conditions prevalent in older adults. (C5)	5
Unit 4		
Barriers to healthy aging	1. Assess and modify barriers that impact healthy aging (C5)	4
Unit 5		
Fitness among older adults	1. Review fitness evaluation protocols and principles of exercise prescription (C2) 2. Assess health, fitness and wellness in older adults. (C5) 3. Debate exercise as medicine in aging (C5)	10
Unit 6		
Elderly athletes	1. Assess injuries among older athletes (C5) 2. Explain hydration, nutrition and training requirements in elderly athletes (C5) 3. List the sport events for older adults (C1)	4
Unit 7		
Healthy aging initiatives	1. Outline the ten priorities proposed by WHO for a decade of action on healthy aging (C2) 2. Explain international and national healthy aging initiatives (C2)	5
Total		39

Learning Strategies, Contact Hours and Student Learning Time (SLT)		
Learning Strategies	Contact Hours	Student Learning Time (SLT)
Lecture	13	26
Seminar	8	16
Small group discussion (SGD)	12	24
Problem Based Learning (PBL)	2	4
Case Based Learning (CBL)	4	8
Total	39	78

Assessment Methods			
Formative		Summative	
Seminars/Presentation		Mid Semester/Sessional Exam (Theory)	
		End Semester Exam (Theory)	
Mapping of Assessment with COs			
Nature of Assessment	CO1	CO2	CO3
Mid Semester / Sessional Examination 1	x	x	
Presentations	x	x	x
End Semester Exam	x	x	x
Feedback Process	Mid-Semester Feedback		
	End-Semester Feedback		
Main Reference	<ol style="list-style-type: none"> 1. Brill PA. Functional fitness for older adults. Human Kinetics; 2004. 2. Chodzko-Zajko W, American College of Sports Medicine. ACSM's exercise for older adults. Lippincott Williams & Wilkins; 2013 Mar 22. 3. Baechle TR, Westcott WL. Fitness Professional's Guide to Strength Training Older Adults. Human Kinetics; 2010. 4. Staples WH, Kegelmeyer D, Heitzman J. Geriatric physical therapy. McGraw-Hill; 2016 Mar 29. 5. Guccione AA, Avers D, Wong R. Geriatric Physical Therapy-eBook. Elsevier Health Sciences; 2011 Mar 7. 6. Centers for Disease Control and Prevention, Falls Among Older Adults: An Overview. Available at http://www.cdc.gov/ncipc/factsheets/adultfalls.htm 		
Additional References	<ol style="list-style-type: none"> 1. Bradom's Physical Medicine and Rehabilitation, 5th edition, Elsevier, 2015. 2. DeLisa's Physical Medicine and Rehabilitation, 5th edition, Lippincott Williams and Wilkins 3. Multidisciplinary Approach to Rehabilitation- Shrawan Kumar 4. Physical Medical and Rehabilitation- Susan B.O'Sullivan 		

Manipal College of Health Professions								
Name of the Department		Physiotherapy						
Name of the Program		Master of Physiotherapy (Geriatrics)						
Course Title		Clinical Practice in Physiotherapy for Healthy Aging						
Course Code		PTH7314						
Academic Year		Second						
Semester		IV						
Number of Credits		12						
Course Prerequisite		Students should have knowledge in age related changes in structure and function of body systems, preventive measures and relevant physiotherapeutic skills.						
Course Synopsis		This module is designed to enable students to apply fundamental and advanced knowledge in therapeutic sciences, demonstrate comprehensive assessment techniques and interpret findings, formulate and prescribe specific treatment plan. The students will also be able to conduct a holistic and comprehensive treatment intervention safely and competently, monitor and re-evaluate treatment plans, use problem-solving principles and evidence-based practice in decision making of patient/client management.						
Course Outcomes (COs)								
At the end of the course student shall be able to:								
CO1	Evaluate and plan a detailed evidence based Physiotherapy assessment program for healthy aging elderly. (P5, A3)							
CO2	Demonstrate patient centered approach and deliver evidence based physiotherapy for health promotion for healthy aging elderly (C5, P5, A3)							
CO3	Discuss health related information and display verbal and written communication with patients/ clients, caregivers, peers administrators and health care professionals and ability to work as a team (P5, A3)							
CO4	Practice ethical principles during assessment and treatment (A4)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		x						
CO2		x				x		
CO3		x			x			
CO4		x		x				

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Comprehensive Physiotherapy evaluation and management in Geriatric giants	<ol style="list-style-type: none"> 1. Demonstrate methods to detect the risk factors and measure the signs of: (P5, A3) <ul style="list-style-type: none"> • frailty • balance dysfunction with or without history of fall • Pelvic floor dysfunction with or without history of incontinence, • iatrogenic disorders, • sarcopenia • mental health issues including depression and dementia. • Low bone mineral density with or without fracture • Risk of cardiovascular dysfunction 2. Select, administer, and interpret psychometrically sound outcome measures to identify risk factors of these health disorders of older adults. (P5, A2) 3. Demonstrate exercise testing and prescription in older adults with special considerations to prevention of geriatric giants. (P5,A3) 4. Plan a comprehensive prevention program of these health conditions for an older adult (P5, A3) 5. Apply principles of universal design to mitigate the risks and improve activity and participation among older adults (P5, A2) 6. Discuss health related information with clients, caregivers, peers, administrators and health care professionals and displays ability to work as a team (P5, A3) 7. Displays ethical and professional behavior (Autonomy, Beneficence and Justice) during assessment and treatment of clients. (A4) 	300
Unit 2		
Comprehensive community based healthy aging initiatives	<ol style="list-style-type: none"> 1. Plan a comprehensive community based health aging program (P5, A3) 2. Choose validated outcome measures used for screening in community based health aging program. (P5, A2) 3. Plan a comprehensive community based prevention program for health aging (P5, A3) 	168

Content	Competencies	Number of Hours
	4. Discuss health related information with clients, caregivers, peers, administrators and health care professionals and displays ability to work as a team (P5, A3) 5. Displays ethical and professional behavior (Autonomy, Beneficence and Justice) during assessment and treatment of clients. (A4)	
Total		468

Learning Strategies, Contact Hours and Student Learning Time (SLT)				
Learning Strategies	Contact Hours	Student Learning Time (SLT)		
Self-directed learning (SDL)	36	72		
Case Based Learning (CBL)	28	56		
Clinic	360	-		
Practical	28	56		
Assessment	16	32		
Total	468	216		
Assessment Methods				
Formative		Summative		
Case presentations		End Semester Exam (Practical)		
Clinical performance				
Mapping of Assessment with COs				
Nature of Assessment	CO1	CO2	CO3	CO4
Case Presentations	x	x	x	x
Clinical performance	x	x	x	x
End Semester Exam	x	x	x	x
Feedback Process	Mid-Semester Feedback			
	End-Semester Feedback			
Main Reference	1. Textbook of Geriatric Medicine and Gerontology by Fillit, Howard (8th Edition) Publisher: Clinical Key 2. Current Diagnosis and Treatment in Geriatrics by Williams, Brie A Publisher: Access Medicine(McGraw Hill) 3. Staples WH, Kegelmeyer D, Heitzman J. Geriatric physical therapy. McGraw-Hill; 2016 Mar 29. 4. Guccione AA, Avers D, Wong R. Geriatric Physical Therapy-eBook. Elsevier Health Sciences; 2011 Mar 7. 5. Centers for Disease Control and Prevention, Falls Among Older Adults: An Overview. Available at http://www.cdc.gov/ncipc/factsheets/adultfalls.htm .			

	<ol style="list-style-type: none"> 6. American Geriatric Society, British Geriatrics Society, and American Academy of Orthopaedic Surgeons. Guideline for the Prevention of Falls in Older Persons. J Am Geriatr Soc. 2001;49:664-672. 7. Thompson, M. FOCUS: Geriatric Physical Therapy. Balance and Motor Control. Section on Geriatrics American Physical Therapy Association; 2001 8. Geriatrics Rehabilitation- Carole Lewis and Jennifer Bottomley
<p>Additional References</p>	<ol style="list-style-type: none"> 1. Bradom's Physical Medicine and Rehabilitation, 5th edition, Elsevier, 2015. 2. DeLisa's Physical Medicine and Rehabilitation, 5th edition, Lippincott Williams and Wilkins 3. Multidisciplinary Approach to Rehabilitation- Shrawan Kumar 4. Physical Medical and Rehabilitation- Susan B.O'Sullivan

Manipal College of Health Professions								
Name of the Department	Physiotherapy							
Name of the Program	Master of Physiotherapy (Geriatrics)							
Course Title	Research Project in Geriatrics							
Course Code	PTH7380							
Academic Year	Second							
Semester	IV							
Number of Credits	05							
Course Prerequisite	Students should have basic knowledge in research methodology							
Course Synopsis	<p>This course is designed to facilitate the student to apply knowledge in Biostatistics to the data collected through data entry, data analysis and interpretation. The course will develop skills in the use of essential statistical software for the management and analysis of data. The course will also facilitate the application of knowledge of scientific writing into the final submission of the research project. The course will promote the student's ability to justify the study and its findings through both written and spoken methods. It will also sensitize the student to the process of developing a manuscript to a journal. The course will also expose the student to the guidelines on completion of a research project as per prevailing regulatory and institutional norms.</p>							
Course Outcomes (COs) At the end of the course student shall be able to:								
CO1	Perform data analysis and interpret results (C4, P4)							
CO2	Prepare and submit dissertation document and manuscript (P4)							
CO3	Present and defend dissertation (P4,A3)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	X	X						
CO2						X	X	
CO3		X	X					

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Data compilation	Perform data entry and prepare for analysis in statistical software (P4)	26
Unit 2		
Statistical analysis	Perform appropriate statistical tests and interprets the results (C5,P4)	13

Content	Competencies	Number of Hours
Unit 3		
Dissertation and Manuscript writing	Prepare the dissertation document according to institutional guidelines (P4) Prepares manuscript for submission to an indexed journal (P4)	52
Unit		
Dissertation presentation	Present and defend the dissertation to the relevant scientific committee(s) (P4, A3)	13
Unit 5		
Closure report	Complete requirements regarding closure of research project (P4)	26
Total		130

Learning Strategies, Contact Hours and Student Learning Time (SLT)			
Learning Strategies	Contact Hours	Student Learning Time (SLT)	
Small Group Discussion (SGD)	16	32	
Self-directed learning (SDL)	80	-	
Practical	10	-	
Assessment	24	48	
Total	130	80	
Assessment Methods			
Formative		Summative	
Research progress and conduct		Presentation and Viva	
Mapping of Assessment with COs			
Nature of Assessment	CO1	CO2	CO3
Quiz / Viva			x
Assignments/Presentations		x	
Clinical/Practical Log Book/ Record Book	x		
End Semester Exam- Viva			x
Feedback Process	Mid-Semester Feedback		
	End-Semester Feedback		
Main Reference	<ul style="list-style-type: none"> • Research for Physiotherapists: Project Design and Analysis - Caroline Hicks. • Foundations of Clinical Research by Leslie Gross Portney • Tests, Measurements and Research in Behavioural Sciences by A K Singh • Physical Therapy Research: Principles and Applications by Elizabeth Domholdt • Rehabilitation Research - E-Book: Principles and Applications by Russell Carter, Jay Lubinsky, et al. 		

- Essentials of Research Methodology for all Physiotherapy and Allied Health Sciences Students by Ramalingam Thangamani A

NOTE: this is not an exhaustive list of references and there will be other textbooks and articles which should be referenced as well

SEMESTER - IV

Option 2: Elective in Aging and Diseases

COURSE CODE : COURSE TITLE

PTH7322 : Physiotherapy in Aging and Disease

**PTH7324 : Clinical Practice in Physiotherapy for
Aging and Disease**

PTH7380 : Research Project in Geriatrics

Manipal College of Health Professions								
Name of the Department		Physiotherapy						
Name of the Program		Master of Physiotherapy (Geriatrics)						
Course Title		Physiotherapy in Aging and Diseases						
Course Code		PTH7322						
Academic Year		Second						
Semester		IV						
Number of Credits		03						
Course Prerequisite		Students should have knowledge in pathological changes in structure and function of aging body systems and relevant physiotherapeutic skills.						
Course Synopsis		This module is designed to enable students to gain knowledge and apply comprehensive evaluation of chronic and acute illness among elderly and facilitate the students in planning and delivering the management using conventional and contemporary treatment approaches.						
Course Outcomes (COs): At the end of the course student shall be able to:								
CO1	Appraise aging as disease and explain conditions affecting older adults with emphasis to the movement system. (C5)							
CO2	Deduct problem-solving principles and evidence-based practice in decision making in the management of older adults. (C5)							
CO3	Identify the scope and limitations of professional practices, manage and refer appropriately. (C3)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	x							
CO2	x					x		
CO3	x		x					

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Aging as a disease	1. Explain the pathological manifestations of aging (C5) 2. Build the concept of disability with aging (C3)	6
Unit 2		
Conditions affecting older adults emphasizing the movement systems	1. Appraise the single and multi-system clinical conditions affecting movement among older adults (C5)	6

Content	Competencies	Number of Hours
Unit 3		
Premature aging	1. List the progeroid syndromes (C4)	3
Unit 4		
Diseases and medications	1. Utilize up-to-date evidence-based medication resources clarifying common uses, side-effects, and signs and symptoms of abuse, addiction and under and overdosing of prescription and non-prescription medications commonly used by older adults. (C3)	6
Unit 5		
Pain in older adults	<ol style="list-style-type: none"> 1. Discuss the epidemiology of pain in older adults (C5) 2. Explain the pathophysiology of pain (C5) 3. Demonstrate physical examination and tools for assessment of pain (C5) 4. Discuss the factors affecting pain: provocative and relieving (C5) 5. Elaborate and design management strategies for alleviation and modulation of pain (C5) 	7
Unit 6		
Physiotherapy management in aging and diseases	<ol style="list-style-type: none"> 1. Outline the principles of practice of geriatric rehabilitation (C2) 2. Develop and construct a plan of care for the physical therapy management of patients or clients with complex medical profiles, including multiple comorbidities and significant pharmacological considerations (C3) 	6
Unit 7		
Geriatric home care	<ol style="list-style-type: none"> 1. Compare and contrast the services offered and delivery methods (C4) 2. Decide the eligibility of older adults for home care (C5) 3. Discuss the benefits and cost effectiveness of geriatric homes (C7) 	5
Total		39

Learning Strategies, Contact Hours and Student Learning Time (SLT)				
Learning Strategies		Contact Hours	Student Learning Time (SLT)	
Lecture		13	26	
Seminar		8	16	
Small group discussion (SGD)		12	24	
Problem Based Learning (PBL)		2	4	
Case Based Learning (CBL)		4	8	
Total		39	78	
Assessment Methods				
Formative		Summative		
Seminars/Presentations		Mid Semester/Sessional Exam (Theory)		
		End Semester Exam (Theory)		
Mapping of Assessment with COs				
Nature of Assessment		CO1	CO2	CO3
Mid Semester / Sessional Examination 1		x	x	x
Presentations		x	x	x
End Semester Exam		x	x	x
Feedback Process		Mid-Semester Feedback		
		End-Semester Feedback		
Main Reference		<ol style="list-style-type: none"> 1. Textbook of Geriatric Medicine and Gerontology by Fillit, Howard (8th Edition) Publisher: Clinical Key 2. Current Diagnosis and Treatment in Geriatrics by Williams, Brie A Publisher: Access Medicine(McGraw Hill) 3. Staples WH, Kegelmeyer D, Heitzman J. Geriatric physical therapy. McGraw-Hill; 2016 Mar 29. 4. Guccione AA, Avers D, Wong R. Geriatric Physical Therapy- eBook. Elsevier Health Sciences; 2011 Mar 7. 5. Centers for Disease Control and Prevention, Falls Among Older Adults: An Overview. Available at http://www.cdc.gov/ncipc/factsheets/adultfalls.htm. 6. American Geriatric Society, British Geriatrics Society, and American Academy of Orthopaedic Surgeons. Guideline for the Prevention of Falls in Older Persons. J Am Geriatr Soc. 2001;49:664-672. 7. Thompson, M. FOCUS: Geriatric Physical Therapy. Balance and Motor Control. Section on Geriatrics American Physical Therapy Association; 2001 8. Benzon H, Rathmell JP, Wu CL, Turk D, Argoff CE, Hurley RW. Practical Management of Pain E-Book. Elsevier Health Sciences; 2013 Sep 11. 		
Additional References		<ol style="list-style-type: none"> 1. Bradom's Physical Medicine and Rehabilitation, 5th edition, Elsevier, 2015. 2. DeLisa's Physical Medicine and Rehabilitation, 5th edition, Lippincott Williams and Wilkins 3. Multidisciplinary Approach to Rehabilitation- Shrawan Kumar 4. Physical Medical and Rehabilitation- Susan B.O'Sullivan 		

Manipal College of Health Professions								
Name of the Department	Physiotherapy							
Name of the Program	Master of Physiotherapy (Geriatrics)							
Course Title	Clinical Practice in Physiotherapy for Aging and Disease							
Course Code	PTH7324							
Academic Year	Second							
Semester	IV							
Number of Credits	03							
Course Prerequisite	Students should have knowledge in pathological changes in structure and function of aging body systems and relevant physiotherapeutic skills.							
Course Synopsis	This module is designed to enable students to apply fundamental and advanced knowledge in therapeutic sciences, demonstrate comprehensive assessment techniques and interpret findings, formulate and prescribe specific treatment plan. The students will also be able to conduct a holistic and comprehensive treatment intervention safely and competently, monitor and re-evaluate treatment plans, use problem-solving principles and evidence-based practice in decision making of patient/client management.							
Course Outcomes (COs)								
At the end of the course student shall be able to:								
CO1	Demonstrate evaluation and perform a detailed physiotherapy assessment for single and multi-system dysfunctions in older adults(P5,A3)							
CO2	Demonstrate patient centered approach and deliver evidence based physiotherapy for single and multi-system dysfunctions in older adults (C5, P5, A3)							
CO3	Discuss health related information and display verbal and written communication with patients/ clients, caregivers, administration, peers and health care professionals and ability to work as a team (P5, A3)							
CO4	Practice ethical principles during assessment and treatment (A4)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		x	x					
CO2		x				x		x
CO3		x			x			
CO4		x		x				

Course Content and Outcomes:

Content	Competencies	Number of Hours
Unit 1		
Physiotherapy for neuromuscular system dysfunctions in older adults	<ol style="list-style-type: none"> 1. Demonstrate evaluation and perform a detailed physiotherapy assessment of neuromuscular dysfunctions in older adults(P5,A3) 2. Plan an evidence based physiotherapy management for neuromuscular dysfunctions in older woman with emphasis on health promotion, disease prevention and education (P5, A3) 3. Select, administer, and interpret psychometrically sound outcome measures/ tools (P5, A3) 4. Apply principles of universal design to mitigate the risks and improve activity and participation among older adults with neuromuscular dysfunctions (P5, A2) 5. Discuss health related information with clients, caregivers, peers, administrators, and health care professionals and displays ability to work as a team (P5, A3) 6. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during assessment and intervention (A4) 	75
Unit 2		
Physiotherapy for cardiovascular and pulmonary system dysfunctions in older adults	<ol style="list-style-type: none"> 1. Demonstrate evaluation and perform a detailed physiotherapy assessment of cardiovascular and pulmonary system dysfunctions in older adults (P5,A3) 2. Plan an evidence based physiotherapy management for cardiovascular and pulmonary system in older woman with emphasis on health promotion, disease prevention and education (P5, A3) 3. Select, administer, and interpret psychometrically sound outcome measures/ tools (P5, A3) 4. Apply principles of universal design to mitigate the risks and improve activity and participation among older adults with cardiovascular and pulmonary system dysfunctions (P5, A2) 5. Discuss health related information with clients, caregivers, peers, administrators, 	50

Content	Competencies	Number of Hours
	<p>and health care professionals and displays ability to work as a team (P5, A3)</p> <p>6. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during assessment and intervention (A4)</p>	
Unit 3		
<p>Physiotherapy for neuro-cognitive and neuro-psychological conditions older adults</p>	<ol style="list-style-type: none"> 1. Demonstrate evaluation and perform a detailed physiotherapy assessment of dementia, delirium and depression in older adults (P5,A3) 2. Plan an evidence based physiotherapy management for dementia, delirium and depression with emphasis on health promotion, disease prevention and education (P5, A3) 3. Select, administer, and interpret psychometrically sound outcome measures/ tools (P5, A3) 4. Apply principles of universal design to mitigate the risks and improve activity and participation among older adults with dementia, delirium or depression (P5, A2) 5. Discuss health related information with clients, caregivers, peers, administrators, and health care professionals and displays ability to work as a team (P5, A3) 6. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during assessment and intervention (A4) 	75
Unit 4		
<p>Physiotherapy for wound healing and multi-system dysfunctions in older adults</p>	<ol style="list-style-type: none"> 1. Demonstrate evaluation and perform a detailed physiotherapy assessment and management for wound healing and multi-system dysfunctions (P5, A3) 2. Plan an evidence based physiotherapy management for wound healing(P5, A3) 3. Plan an evidence based physiotherapy management for multi-system dysfunctions including cancers, obesity, autoimmune diseases; with emphasis on health promotion, disease prevention and education (P5, A3) 4. Demonstrate the use of validated outcome tools (P5, A3) 5. Apply principles of universal design to mitigate the risks and improve activity and 	75

Content	Competencies	Number of Hours
	participation among older adults (P5, A2) 6. Discuss health related information with clients, caregivers, peers, administrators, and health care professionals and displays ability to work as a team (P5, A3) 7. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during assessment and intervention (A4)	
Unit 5		
Physiotherapy for urogynaecological conditions in older adults	1. Evaluate and plan an evidence based physiotherapy assessment and management for urogynaecological conditions in older adults with emphasis on health promotion, disease prevention and education (P5, A3) 2. Demonstrate the use of validated outcome tools (P5, A3) 3. Apply principles of universal design to mitigate the risks and improve activity and participation among older adults with urogynaecological conditions (P5, A2) 4. Discuss health related information with clients, caregivers, peers, administrators, and health care professionals and displays ability to work as a team (P5, A3) 5. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during assessment and intervention (A4)	75
Unit 5		
Pain evaluation and management	1. Plan a comprehensive physical examination, demonstrate clinical decision making and perform physiotherapy management of acute and chronic pain among older adults (P5, A3) 2. Choose validated outcome measures (P5, A2) 3. Discuss health related information with clients, caregivers, peers, administrators and health care professionals and displays ability to work as a team (P5, A3) 4. Display ethical and professional behavior (Autonomy, Beneficence and Justice) during evaluation (A4)	118
Total		468

Learning Strategies, Contact Hours and Student Learning Time (SLT)				
Learning Strategies	Contact Hours	Student Learning Time (SLT)		
Self-directed learning (SDL)	36	72		
Case Based Learning (CBL)	28	56		
Clinic	360	-		
Practical	28	56		
Assessment	16	32		
Total	468	216		
Assessment Methods				
Formative		Summative		
Case presentations		End Semester Exam (Practical)		
Clinical performance				
Mapping of Assessment with COs				
Nature of Assessment	CO1	CO2	CO3	CO4
Case Presentations	x	x	x	x
Clinical performance	x	x	x	x
End Semester Exam	x	x	x	x
Feedback Process	Mid-Semester Feedback			
	End-Semester Feedback			
Main Reference	<ol style="list-style-type: none"> 1. Textbook of Geriatric Medicine and Gerontology by Fillit, Howard (8th Edition) Publisher: Clinical Key 2. Current Diagnosis and Treatment in Geriatrics by Williams, Brie A Publisher: Access Medicine(McGraw Hill) 3. Staples WH, Kegelmeyer D, Heitzman J. Geriatric physical therapy. McGraw-Hill; 2016 Mar 29. 4. Guccione AA, Avers D, Wong R. Geriatric Physical Therapy- eBook. Elsevier Health Sciences; 2011 Mar 7. 5. Centers for Disease Control and Prevention, Falls Among Older Adults: An Overview. Available at http://www.cdc.gov/ncipc/factsheets/adultfalls.htm. 6. American Geriatric Society, British Geriatrics Society, and American Academy of Orthopaedic Surgeons. Guideline for the Prevention of Falls in Older Persons. J Am Geriatr Soc. 2001;49:664-672. 7. Thompson, M. FOCUS: Geriatric Physical Therapy. Balance and Motor Control. Section on Geriatrics American Physical Therapy Association; 2001 8. Geriatrics Rehabilitation- Carole Lewis and Jennifer Bottomley 			
Additional References	<ol style="list-style-type: none"> 1. Bradom's Physical Medicine and Rehabilitation, 5th edition, Elsevier, 2015. 2. DeLisa's Physical Medicine and Rehabilitation, 5th edition, Lippincott Williams and Wilkins 3. Multidisciplinary Approach to Rehabilitation- Shrawan Kumar 4. Physical Medical and Rehabilitation- Susan B.O'Sullivan 			

Manipal College of Health Professions								
Name of the Department	Physiotherapy							
Name of the Program	Master of Physiotherapy (Geriatrics)							
Course Title	Research Project in Geriatrics							
Course Code	PTH7380							
Academic Year	Second							
Semester	IV							
Number of Credits	05							
Course Prerequisite	Students should have basic knowledge in research methodology							
Course Synopsis	<p>This course is designed to facilitate the student to apply knowledge in Biostatistics to the data collected through data entry, data analysis and interpretation. The course will develop skills in the use of essential statistical software for the management and analysis of data. The course will also facilitate the application of knowledge of scientific writing into the final submission of the research project. The course will promote the student's ability to justify the study and its findings through both written and spoken methods. It will also sensitize the student to the process of developing a manuscript to a journal. The course will also expose the student to the guidelines on completion of a research project as per prevailing regulatory and institutional norms.</p>							
Course Outcomes (COs)								
At the end of the course student shall be able to:								
CO1	Perform data analysis and interpret results (C4, P4)							
CO2	Prepare and submit dissertation document and manuscript (P4)							
CO3	Present and defend dissertation (P4,A3)							
Mapping of Course Outcomes (COs) to Program Outcomes (POs)								
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	x	x						
CO2						x	x	
CO3		x	x					

Course Content and Outcomes

Content	Competencies	Number of Hours
Unit 1		
Data compilation	Perform data entry and prepare for analysis in statistical software (P4)	26

Content	Competencies	Number of Hours
Unit 2		
Statistical analysis	Perform appropriate statistical tests and interprets the results (C5,P4)	13
Unit 3		
Dissertation and Manuscript writing	Prepare the dissertation document according to institutional guidelines (P4) Prepares manuscript for submission to an indexed journal (P4)	52
Unit 4		
Dissertation presentation	Present and defend the dissertation to the relevant scientific committee(s) (P4, A3)	13
Unit 5		
Closure report	Complete requirements regarding closure of research project (P4)	26
Total		130

Learning Strategies, Contact Hours and Student Learning Time (SLT)			
Learning Strategies	Contact Hours	Student Learning Time (SLT)	
Small Group Discussion (SGD)	16	32	
Self-directed learning (SDL)	80	-	
Practical	10	-	
Assessment	24	48	
Total	130	80	
Assessment Methods			
Formative		Summative	
Research progress and conduct		Presentation and Viva	
Mapping of Assessment with COs			
Nature of Assessment	CO1	CO2	CO3
Quiz / Viva			x
Assignments/Presentations		x	
Clinical/Practical Log Book/ Record Book	x		
End Semester Exam- Viva			x
Feedback Process	Mid-Semester Feedback		
	End-Semester Feedback		
Main Reference	<ul style="list-style-type: none"> • Research for Physiotherapists: Project Design and Analysis - Caroline Hicks. • Foundations of Clinical Research by Leslie Gross Portney • Tests, Measurements and Research in Behavioural 		

	<p>Sciences by A K Singh</p> <ul style="list-style-type: none">• Physical Therapy Research: Principles and Applications by Elizabeth Domholdt• Rehabilitation Research - E-Book: Principles and Applications by Russell Carter, Jay Lubinsky, et al.• Essentials of Research Methodology for all Physiotherapy and Allied Health Sciences Students by Ramalingam Thangamani A <p>NOTE: this is not an exhaustive list of references and there will be other textbooks and articles which should be referenced as well</p>
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7. Program Outcomes (POs) and Course Outcomes (COs) Mapping

Sem.	Course Code	Course Title	Credits	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
I	ABS6101	Advanced Biostatistics & Research Methodology	4	CO1 CO2 CO3 CO4 CO5					CO2	CO4	
I	PTH6001	Principles of Physiotherapy Practice	3	CO1 CO2 CO3 CO4 CO5					CO4 CO5		CO1
I	PTH6003	Clinical Practice in Physiotherapy	12		CO1 CO2 CO3 CO4		CO1 CO2 CO4		CO3		
I	PTH6370	Research Proposal in Geriatrics	2	CO1	CO1 CO2			CO2			
II	EPG6201	Ethics and Pedagogy	2	CO1 CO2 CO3 CO4 CO5	CO4		CO1 CO2 CO3 CO5				
II	PTH6302	Foundations of Physiotherapy in Geriatrics	3	CO1 CO2 CO3 CO4 CO5		CO2	CO4		CO3		
II	PTH6304	Clinical Practice in Physiotherapy for Geriatrics - I	12		CO1 CO2 CO3	CO4	CO4	CO1	CO2 CO3		
II	PTH6380	Research Progress in Geriatrics- I	2		CO2	CO2	CO1		CO1		
III	PTH7301	Physiotherapy in General Geriatrics	3	CO1 CO2 CO3					CO1 CO2		
III	PTH7303	Clinical Practice in Physiotherapy for Geriatrics- II	12	CO1 CO2	CO1 CO2 CO3 CO4		CO4		CO3		
III	PTH7305	Evidence based Physiotherapy Practice in Geriatrics	2	CO2 CO3					CO1 CO2 CO3	CO1	
III	PTH7370	Research Progress in Geriatrics- II	3	CO1	CO1 CO3	CO2		CO2	CO3		

Sem.	Course Code	Course Title	Credits	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
IV	PTH7312	Physiotherapy in Healthy Aging	3	CO1 CO2 CO3					CO1	CO3	
IV	PTH7314	Clinical Practice in Physiotherapy for Healthy Aging	12		CO1 CO2 CO3		CO3	CO2			CO2
IV	PTH7380	Research Project in Geriatrics	5	CO1	CO1 CO3	CO3			CO2	CO2	
IV	PTH7322	Physiotherapy in Aging and Disease	3	CO1 CO2 CO3		CO3			CO2		
IV	PTH7324	Clinical Practice in Physiotherapy for Aging and Disease	12		CO1 CO2 CO3	CO1	CO3	CO2			CO2
IV	PTH7380	Research Project in Geriatrics	5	CO1	CO1 CO3	CO3			CO2	CO2	

8. MCHP PG PROGRAM REGULATION

1. Program Structure

- 1.1. The program offers a semester based credit system (with few programs offering specialization too).
- 1.2. An academic year consists of two semesters - Odd semester (July - December) and Even semester (January - June)
- 1.3 Each semester shall extend over a minimum period of 13 weeks of academic delivery excluding examination days, semester breaks, declared holidays and non-academic events.
- 1.4 Medium of instruction shall be in English

2 Credit Distribution

- 2.1 Each semester has minimum 13 weeks of contact sessions. One credit = 13 hours. The credit distribution hours for Lecture, Tutorial, Practical, Clinics and Project are as follows:

Lecture (L)	:	1 Hour /week = 1 credit
Tutorial (T)	:	1 Hour /week = 1 credit
Practical/Project (P/PR)	:	2 Hours/week = 1 credit
Clinics (CL)	:	3 Hours/week = 1 credit

- 2.2 A semester has courses structured as theory, practical, and clinics. Each course is of minimum 2 credits. The maximum credits for theory course is 4; theory and practical combined is 5.

3 Attendance

- 3.1 Minimum attendance requirements for each course is:

- i. Theory : 85 %
- ii. Clinics / Practical : 90 %

- 3.1 As per the directives of MAHE, there will be no consideration for leave on medical grounds. The student will have to adjust the same in the minimum prescribed attendance.
- 3.2 Students requiring **leave** during the academic session should apply for the same through a formal application to the Head of Department through their respective Class In-charge/ Coordinator. The leave will be considered as absent and reflected in their attendance requirements.

- 3.3 No leverage will be given by the department for any attendance shortage.
- 3.4 Students, Parents/ guardians can access the attendance status online periodically. Separate intimation regarding attendance status would not be sent to parents/students.
- 3.5 Students having attendance shortage in any course (theory & practical) will not be permitted to appear for the End-semester exam (ESE) of the respective course.

4 Examination

- 4.1 Exams are in two forms – Sessional examination (conducted as a part of internal assessment) and End semester examination.
- 4.2 The final evaluation for each course shall be based on Internal Assessment Components (**IAC**) and the End-semester examinations (**ESE**) based on the weightage (as indicated in clause 5.1) given for respective courses.
- 4.3 IAC shall be done on the basis of a continuous evaluation after assessing the performance of the student in mid semester exam, class participation, assignments, seminars or any other component as applicable to a course.
- 4.4 All the ESE for the odd semesters (**regular ESE**) will be conducted in November-December. All the ESE for the even semesters (**regular ESE**) will be conducted in May-June.
- 4.5 For those whose failed to clear any course during regular ESE, a **supplementary/make up exam** is conducted 2 weeks immediately after the ESE result declaration to enable him / her to earn those lost credits. A nominal fee as per MAHE rules will be applicable during this examination.
- 4.6 For core courses, the duration of ESE for a 2 credit course would be 2 hours (50 marks) and for a course with 3 or more credits, 3 hours (100 marks). For program elective course, the exam duration is 3 hours (100 marks).

5. Weightage for Internal Assessment Component (IAC) and End Semester Exam (ESE)

5.1 Any one or a combination of marks distribution criteria applicable to a course.

IAC Weightage (%)	ESE Weightage (%)
30	70
50	50
100	Nil
Nil	100

6. Minimum Requirements for Pass

6.1. Pass in a course will be reflected as grades. No candidate shall be declared to have passed in any course unless he/she obtains not less than **“E” grade**

6.2. For all courses (core / non-core), candidate should obtain a minimum of 50% (ESE) to be declared as pass.

6.3 When a student appears for **supplementary examination**, the maximum grade awarded is **“C”** grade or below irrespective of their performance.

6.4. For students who fail to secure a minimum of ‘E’ grade for a course, an **improvement examination** is conducted to improve their IAC marks. The student can appear for these examination along with the subsequent batches’ mid semester / sessional exams. The marks obtained in other components of IAC can be carried forward without reassessment. A nominal fee is charged as per MAHE for per course of improvement in IAC.

7. Calculation of GPA and CGPA

7.1. Evaluation and Grading (**Relative Grading**) of students shall be based on GPA (Grade Point Average) & CGPA (Cumulative Grade Point Average).

7.2. The overall performance of a student in each semester is indicated by the Grade Point Average (GPA). The overall performance of the student for the entire program is indicated by the Cumulative Grade Point Average (CGPA).

7.3. A ten (10) point grading system (**credit value**) is used for awarding a letter grade in each course.

Letter Grade	A+	A	B	C	D	E	F/I/DT
Grade points	10	9	8	7	6	5	0

DT – Detained/Attendance shortage, I – Incomplete

7.4 Calculation of GPA & CGPA: An example is provided

Course code	Course	Credits (a)	Grade obtained by the student	Credit value (b)	Grade Points (a x b)
AHS 101	Course - 1	4	B	8	32
AHS 103	Course - 2	4	B	8	32
AHS 105	Course - 3	3	A+	10	30
AHS 107	Course - 4	4	C	7	28
AHS 109	Course - 5	5	A	9	45
Total		20	-	-	167

1st Semester GPA = Total grade points / total credits

$$167/20 = 8.35$$

Suppose in **2nd semester GPA = 7** with respective course credit 25

$$\text{Then, 1st Year CGPA} = \frac{(8.35 \times 20) + (7 \times 25)}{20 + 25} = 7.6$$

8. Progression Criteria to higher semesters

- 8.1 There is no separate criteria / credits required in order to be promoted to the next academic year.
- 8.3 However, in order to be eligible to appear for fourth semester (Theory / practical / project submission), the student should have cleared all his previous semesters (i.e. first, second and third).
- 8.4 The student must complete all the course work requirements by a **maximum of double the program duration**. For e.g. 2 years' program, all the academic course work needs to be completed within 4 years. Failure to do so will result in exit from the program.

9. Semester Break

- 9.1 Students will have a short semester break following their odd and even end-semester examinations.

10. Project / Dissertation

- 10.1 Project / Dissertation will carry credits and marks (as applicable to each program)
- 10.2 Final copy of dissertation (**e-copy**) to be submitted by end of March for plagiarism check and submission to University. A **single hardcopy (student copy)** of the dissertation to be prepared and presented before the external examiner during the viva-voce.
- 10.3 **Manuscript** format of the thesis also to be submitted to the respective guides / dept.

11. Award of Degree

- 11.1 Degree is awarded only on **successful completion of entire coursework.**

Head of the Department

Dean

Deputy Registrar - Academics

Registrar