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 (Paediatrics)

# MPT (Paediatrics)

***With effect from July 2021***

# C O N T E N T  P A G E



**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:**

i. To provide an opportunity for qualified physiotherapists with an undergraduate degree to practice as Paediatric Physiotherapists.
ii. 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.
iii. 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.
iv. 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 in nervous system. 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 (Paediatrics) 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 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 (Paediatrics) 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 |
| **PTH6770** | Research Proposal in Paediatrics | - | - | 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 |
| **PTH6702** | Foundations of Physiotherapy in Paediatrics | 1 | 2 | | - | 3 | 50 | 50 | 100 |
| **PTH6704** | Physiotherapy clinical practice in Paediatrics –I | - | - | - | 36 | 12 | 100 | - | 100 |
| **PTH6780** | Research progress in Paediatrics –I | - | - | 4 | - | 2 | 100 | - | 100 |
| **Total** | | **2** | **3** | **4** | **36** | **19** | **350** | **50** | **400** |
| **Note:** PTH6702 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 |
| **PTH7701** | Physiotherapy in general Paediatrics | 1 | 2 | - | - | 3 | 50 | 50 | 100 |
| **PTH7703** | Physiotherapy clinical practice in Paediatrics - II | - | - | - | 36 | 12 | 50 | 50 | 100 |
| **PTH7705** | Evidence based physiotherapy practice in Paediatrics | 1 | 1 | - | - | 2 | 100 | - | 100 |
| **PTH7770** | Research Progress in Paediatrics - II | - | - | 6 | - | 3 | 100 | - | 100 |
| | **Total** | **2** | **3** | **6** | **36** | **20** | **300** | **100** | **400** |

**Note**:
**PTH7701** will be conducted for 100 marks and normalized to 50 marks
**PTH7703** will be conducted for 100 marks and normalized to 50 marks.

# SEMESTER - IV

### Program Elective

The student may choose from anyone options from the list of Program Elective combinations provided in the table below.

### Option-1: Elective in Paediatric Neurology

| Course Code | Course Title | Credit Distribution (hours/week) | | | | | Marks Distribution | | |
|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | CL | CR | IAC | ESE | Total |
| **PTH7712** | Physiotherapy in Paediatric Neurology | 1 | 2 | - | - | 3 | 50 | 50 | 100 |
| **PTH7714** | Clinical practice in Paediatric Neurology | - | - | - | 36 | 12 | 50 | 50 | 100 |
| **PTH7780** | Research project in Paediatrics | - | - | 10 | - | 5 | 50 | 50 | 100 |
| | **Total** | **1** | **2** | **10** | **36** | **20** | **150** | **150** | **300** |

**Note:**
**PTH7712:** will be conducted for 100 marks and normalized to 50 marks
**PTH7714:** will be conducted for 100 marks and normalized to 50 marks.

## Option-2: Elective in Neonatal and Paediatric Respiratory Care

| Course Code | Course Title | Credit Distribution (hours/week) | | | | | Marks Distribution | | |
|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | CL | CR | IAC | ESE | Total |
| **PTH7722** | Physiotherapy in Neonatal and Paediatric Respiratory Care | 1 | 2 | - | - | 3 | 50 | 50 | 100 |
| **PTH7724** | Clinical practice in Neonatal and Paediatric Respiratory Care | - | - | - | 36 | 12 | 50 | 50 | 100 |
| **PTH7780** | Research Project in Paediatrics | - | - | 10 | - | 5 | 50 | 50 | 100 |
| **Total** | | **1** | **2** | **10** | **36** | **20** | **150** | **150** | **300** |

**Note:**
**PTH7722:** will be conducted for 100 marks and normalized to 50 marks.
**PTH7724:** will be conducted for 100 marks and normalized to 50 marks.

## 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 |
| PTH6770 | : | Research Proposal in Paediatrics |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **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** | • Define statistics (C1)<br>• List the uses of statistics in health science research. (C1)<br>• Explain the role of Statistics in clinical and preventive Medicine. (C2)<br>• Differentiate qualitative and quantitative variables with examples. (C3)<br>• Differentiate discrete and continuous variables with | **4** |

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

| Content | Competencies | Number of Hours |
|---|---|---|
| | (C5) | |
| **Unit 3:** | | |
| | • Define /explain with example the concept of null hypothesis, alternative hypothesis, type I and type II errors. (C2)<br>• Define level of significance, power of the test and p-value (C1)<br>• Explain the difference between one sided and two-sided test (C2)<br>• Give the situation for non-parametric tests. (C2)<br>• List the differences, merits and demerits of non-parametric over parametric tests. (C1) | **4** |
| | • Explain the situation, hypothesis tested, assumptions and example for paired and unpaired t-test. (C2)<br>• Interpret the output of paired and unpaired t-test (C4)<br>• Explain the situation, hypothesis tested, assumptions and example for one-way and repeated measures ANOVA (C2) | **3** |
| | • 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)<br>• Explain the situation, hypothesis tested, assumptions and example for Chi square test association/independence and McNemar's test for association (C2)<br>Computation and interpretation of chi-square test (2 x2 table) and McNemar's test result (C2) | **4** |
| | • Give example for positive and negative correlations. (C2)<br>• Explain different types of correlation with the help of scatter diagrams. (C2)<br>• Give the assumptions, properties, and interpretation of correlation coefficient.(C4)<br>• Explain the situation for the computation of Pearson's and Spearman's correlation coefficient. (C2)<br>• Interpret coefficient of determination.(C4)<br>• Explain the situation, example, application and assumptions for linear and multiple regression.(C2)<br>• Interpret regression coefficients in simple and multiple regression.(C4)<br>• Explain the need for sample size computation.(C2)<br>• Given the situation/ingredients, should be able to determine sample size for estimating mean and proportion, testing of difference in means and | **4** |

| Content | Competencies | Number of Hours |
|---|---|---|
| | proportions of two groups.(C5) | |
| | • Explain the difference between rate, ratio, and proportion with example. (C2)<br>• Calculate rate, ratio, and proportion (C4)<br>• Define and calculate Incidence and prevalence rates.(C4)<br>• Explain the design, merits and demerits of Case report, case series analysis, prevalence studies and ecological studies with example (C2) | **3** |
| | • 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)<br>• Explain the design, analysis (2x2 table and relative risk), merits and demerits of cohort study with example.(C2) | **3** |
| | • Explain confounding with example. (C2)<br>• List the methods to deal with confounding at design and analysis stage.(C1)<br>• Explain the design, analysis, merits and demerits of RCT with example. (C2)<br>• Explain the need of simple, block and stratified randomization with example.(C2)<br>Explain the need and type of blinding with example (C2) | **4** |
| | Explain the situation for the use of logistic regression and survival analysis with example.(C2) | **3** |
| | • Define Population, sample, sampling, and sampling frame. Give one example each.(C1)<br>• List the characteristics of a good sample.(C1)<br>• Differentiate and list the advantages and disadvantages of random and non- random sampling techniques.(C4)<br>• Explain simple, stratified, systematic, cluster and multistage random sampling techniques with examples. List the merits and demerits of each of them.(C2)<br>• Explain Convenience, quota, judgment and snowball sampling with examples. List the merits and demerits of each of them.(C2)<br>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** |
| | • Define Sensitivity, specificity, PPV and NPV. (C1)<br>• Explain with example method of computation and interpretation. (C4)<br>• Explain with example, the situation for the application of | **4** |

| Content | Competencies | Number of Hours |
|---|---|---|
| | Bland Altman plot, Kappa statistic. (C2)<br>• Explain the interpretation of Kappa Statistics. (C2)<br>• Explain the format of various research documents. (C2) | |
| | **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** | 1. Research for Physiotherapists: Project Design and Analysis - Caroline Hicks. (1995)<br>2. Tests, Measurements and Research in Behavioural Sciences by A K Singh (1986)<br>3. Rehabilitation Research - E-Book: Principles and Applications by Russell Carter, Jay Lubinsky, et al. (2015)<br>4. Foundations of Clinical Research by Leslie Gross Portney (2020)<br>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 (Paediatrics) |
| **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)**<br>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) | 01 |
| **Unit 2** | | |
| **Disability and evaluation** | 1. Explain disability (C4)<br>2. Distinguish between different models of disability (C4)<br>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)<br>2. Explain the development of movement across life span (C4)<br>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)<br>2. Explain the principles of exercise testing and prescription (C2) | 03 |
| **Unit 6** | | |
| **Pain** | 1. Explain the physiology of pain (C4)<br>2. Distinguish between different mechanisms of pain control (C4)<br>3. Categorize the strategies of pain management (C4)<br>4. | 01 |
| **Unit 7** | | |
| **Neurophysiology of balance, coordination and locomotion** | 1. Explain the neurophysiology of balance and coordination (C4)<br>2. Explain the neurophysiology of locomotion (C4) | 02 |
| **Unit 8** | | |
| **Theories of Motor control and Motor** | 1. Explain motor control (C4)<br>2. Compare and contrast between different | 02 |

| Content | Competencies | Number of Hours |
|---|---|---|
| **Learning** | theories of Motor control (C4)<br>3. Explain motor learning and theories of Motor Learning (C4) | |
| **Unit 9** | | |
| **Principles of physiotherapy evaluation** | 1. Outline the principles of musculoskeletal, neurological, and cardiopulmonary evaluation (C4)<br>2. Outline the special considerations for physiotherapy evaluation in children, women and older adults (C4)<br>3. Outline the evaluation protocols for physical fitness (C4)<br>4. Explain the principles of diabetic foot examination (C4) | 08 |
| **Unit 10** | | |
| **Gait** | 1. Distinguish between normal and pathological gait (C4)<br>2. Explain the methods of gait analysis (C4) | 01 |
| **Unit 11** | | |
| **Principles and applications of Electrodiagnosis** | 1. List the electrodiagnostic methods (C4)<br>2. Explain the principles of electrodiagnostic testing methods (C4)<br>3. Outline the clinical applications of electrodiagnostic methods (C4) | 01 |
| **Unit 12** | | |
| **Outcome Measures in Physiotherapy** | 1. Categorize the outcome measures based on body structure and function, activity and participation domains of ICF (C4)<br>2. Explain the psychometric properties of commonly used outcome measures (C4)<br>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<br>2. Interpret the findings in clinical investigations relevant to Physiotherapy practice (C2) | 02 |
| **Unit 14** | | |
| **Physiotherapy treatment approaches** | 1. Outline the principles of physiotherapy treatment approaches including manual therapy, neurological, paediatric and | 02 |

| Content | Competencies | Number of Hours |
|---|---|---|
| | cardiopulmonary rehabilitation (C4) | |
| **Unit 15** | | |
| **Therapeutic electrophysical agents** | 1. Categorize therapeutic electrophysical agents (C4)<br>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)<br>2. Explain the processes involved in clinical decision making (C2)<br>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)<br>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** | 1. Albrecht GL, Seelman KD, Bury M, editors. Handbook of disability studies. Sage Publications; 2001 May 24.<br>2. Bélanger AY. Therapeutic electrophysical agents: evidence behind practice. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2010.<br>3. Boissonnault WG, editor. Examination in physical therapy practice: screening for medical disease. New York, NY: Churchill Livingstone; 1995 Jun.<br>4. Braddom's Physical Medicine and Rehabilitation by Cifu David X et al; 5th Ed, Elsevier (2016)<br>5. Brandt Jr EN, Pope AM. Models of disability and rehabilitation.<br>6. Cech DJ, Martin ST. Functional movement development across the life span. Elsevier Health Sciences; 2002 Mar 29.<br>7. Dittmar SS, Gresham GE, editors. Functional assessment and outcome measures for the rehabilitation health professional. Aspen Pub; 1997.<br>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.<br>9. Essentials of Exercise Physiology by William McArdle et al; Wolters Kluwer Health Inc (2016)<br>10. Exercise Physiology: Energy, Nutrition and Human Performance by William McArdle, Frank I. Katch, Victor K. Katch; 7th edition (2010)<br>11. Hausdorff JM, Alexander NB, editors. Gait disorders: evaluation and management. Taylor & Francis US; 2005 Jul 15.<br>12. Haywood K, Getchell N. Life Span Motor Development 6th Edition. Human Kinetics; 2014 Jul 21.<br>13. Levangie PK, Norkin CC. Joint structure and function: a comprehensive analysis. FA Davis; 2011.<br>14. Magee DJ. Orthopedic physical assessment. Elsevier Health Sciences; 2014.<br>15. McMahon SB, Koltzenburg M, Tracey I, Turk D. Wall & Melzack's Textbook of Pain E-Book. Elsevier Health Sciences; 2013. |

| | |
|---|---|
| | 16. MCSP PM. Standards of Physiotherapy Practice.<br>17. Misra UK; et al. Principles of Neurophysiology. Elsevier Health Sciences; 2010<br>18. Neumann DA. Kinesiology of the Musculoskeletal System-E-Book: Foundations for Rehabilitation. Elsevier Health Sciences; 2013.<br>19. Nordin M, Frankel VH, editors. Basic biomechanics of the musculoskeletal system. Lippincott Williams & Wilkins; 2001.<br>20. O'Sullivan SB, Schmitz TJ, Fulk G. Physical rehabilitation. FA Davis; 2013 Jul 23.<br>21. Perry J. Gait analysis. Normal and pathological function. 2010:19-47.<br>22. Shumway-Cook A, Woollacott MH. Motor control: translating research into clinical practice. Lippincott Williams & Wilkins; 2007.<br>23. Shurr DG, Michael JW, Cook TM. Prosthetics and orthotics. Upper Saddle River: Prentice Hall; 2002.<br>24. Siegelbaum SA, Hudspeth AJ. Principles of neural science. Kandel ER, Schwartz JH, Jessell TM, editors. New York: McGraw-hill; 2000 Jan.<br>25. Uustal H. Prosthetics and orthotics. InEssential Physical Medicine and Rehabilitation 2006 (pp. 101-118). Humana Press.<br>26. Wadsworth H, Chanmugam AP. Electrophysical agents in physiotherapy: therapeutic & diagnostic use. Science Press; 1983.<br>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.<br>28. World Confederation for Physical Therapy. WCPT guideline for standards of physical therapy practice.<br>29. Related scientific publications<br><br>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 (Paediatrics) |
| **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** | 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. |

**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** | 1. Perform musculoskeletal, neurological, and cardiopulmonary physiotherapy evaluation (C4, P4, A2)<br>2. Explain the special considerations for physiotherapy evaluation in children, women and older adults and display the assessment techniques (C4, P3, A1)<br>3. Explain the evaluation protocols for physical fitness and measure physical fitness (C4, P3, A1)<br>4. Explain and demonstrate the components of diabetic foot examination (C4, P2, A1)<br>5. Explain the methods of analysis and perform posture, balance and gait evaluation (C4,P4, A1)<br>6. Examine pain and perform pain assessment (C4, P4, A2)<br>7. Explain and demonstrate the components of physiotherapy assessment in wound care (C4, P2, A1)<br>8. Choose the outcome measures based on Impairment, activity and participation domains of ICF in the clinical practice (C4, P1, A1)<br>9. Discuss and display the method of administration of the commonly used outcome measures and interpret it (C4, P3, A1)<br>10. Choose the clinical investigations relevant to Physiotherapy practice (C3, P1, A1): Imaging; Biochemical; Electrophysiological; and systemic functional tests<br>11. Identify and interpret the findings in clinical investigations relevant to Physiotherapy practice (C2, P1, A1)<br>12. Recognize and relate the processes involved in clinical decision making in physiotherapy evaluation (C4, P1, A1)<br>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)<br>14. Demonstrate ethical and professional | 234 |

| Content | Competencies | Number of Hours |
|---|---|---|
| | behavior (Autonomy, beneficence, justice) during physiotherapy evaluation (A3) | |
| **Unit 2** | | |
| **Physiotherapy management in clinical practice** | 1. Perform physiotherapy techniques in clinical practice including musculoskeletal, neurological, and cardiopulmonary rehabilitation (C4, P4, A2)<br>2. Explain the special considerations for physiotherapy management in children, women and older adults and display the treatment techniques (C4, P3, A1)<br>3. Explain the protocols for maintaining and improving physical fitness (C4, P2, A1)<br>4. Explain the principles of diabetic foot management (C4, P2, A1)<br>5. Explain the principles of posture, balance and gait rehabilitation and perform treatment techniques to train posture, balance and gait (C4, P4, A1)<br>6. Categorize and perform the strategies of pain management (C4, P4, A2)<br>7. Display the method of application of therapeutic electrophysical agents in the clinical practice (C4, P4, A1)<br>8. Explain the principles of physiotherapy management in wound care (C4, P2, A1)<br>9. Follow the universal precautions for infection control in physiotherapy practice (C3, P3, A1)<br>10. Recognize and relate the processes involved in clinical decision making in physiotherapy management (C4, P1, A1)<br>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)<br>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** |
| Clinical Performance | |
| Case Presentations | |

| **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** | 1. Albrecht GL, Seelman KD, Bury M, editors. Handbook of disability studies. Sage Publications; 2001 May 24.<br>2. Bélanger AY. Therapeutic electrophysical agents: evidence behind practice. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2010.<br>3. Boissonnault WG, editor. Examination in physical therapy practice: screening for medical disease. New York, NY: Churchill Livingstone; 1995 Jun.<br>4. Braddom's Physical Medicine and Rehabilitation by Cifu David X et al; 5th Ed, Elsevier (2016)<br>5. Brandt Jr EN, Pope AM. Models of disability and rehabilitation.<br>6. Cech DJ, Martin ST. Functional movement development across the life span. Elsevier Health Sciences; 2002 Mar 29.<br>7. Dittmar SS, Gresham GE, editors. Functional assessment and outcome measures for the rehabilitation health professional. Aspen Pub; 1997.<br>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.<br>9. Essentials of Exercise Physiology by William McArdle et al; Wolters Kluwer Health Inc (2016)<br>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.
13. Levangie PK, Norkin CC. Joint structure and function: a comprehensive analysis. FA Davis; 2011.
14. Magee DJ. Orthopedic physical assessment. Elsevier Health Sciences; 2014.
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.
19. Nordin M, Frankel VH, editors. Basic biomechanics of the musculoskeletal system. Lippincott Williams & Wilkins; 2001.
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. InEssential 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

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 (Paediatrics) |
| **Course Title** | **Research Proposal in Paediatrics** |
| **Course Code** | **PTH6770** |
| **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)<br>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)<br>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)<br>2. Comply with the process of obtaining permission to use outcome measures from sources/ developers (A2) | 08 |
| **Unit 4** | | |
| **Research proposal document** | 1. Prepare a research proposal document (P4)<br>2. Choose appropriate statistical tools and tests (C5) | 13 |
| **Unit 5** | | |
| **Scientific Approvals** | 1. Proposes research protocol to relevant scientific committee(s) (P5, A3)<br>2. 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** |
| Presentation | |
| Research progress and conduct | |

| **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** | Presentation |
| **Main References** | 1. Research for Physiotherapists: Project Design and Analysis –Caroline Hicks.<br>2. Foundations of Clinical Research by Leslie Gross Portney<br>3. Tests, Measurements and Research in Behavioural Sciences by A K Singh<br>4. Physical Therapy Research: Principles and Applications by Elizabeth Domholdt<br>5. Rehabilitation Research - E-Book: Principles and Applications by Russell Carter, Jay Lubinsky, et al.<br>6. Essentials of Research Methodology for all Physiotherapy and Allied Health Sciences Students by Ramalingam Thangamani A |

# SEMESTER - II

| COURSE CODE | : | COURSE TITLE |
|---|---|---|
| EPG6201 | : | Ethics and Pedagogy |
| PTH6702 | : | Foundations of Physiotherapy in Paediatrics |
| PTH6704 | : | Physiotherapy Clinical Practice in Paediatrics - I |
| PTH6780 | : | Research Progress in Paediatrics - I |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **Course Title** | **Ethics and Pedagogy** |
| **Course Code** | **EPG6201** |
| **Academic Year** | First |
| **Semester** | II |
| **Number of Credits** | 02 |
| **Course Prerequisite** | NIL |
| **Course Synopsis** | 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.<br>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. |

| **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** | | |
| **Principles of ethics**<br>History and evolution of ethics - Helsinki declaration; Nuremberg Code; Principles of ethics and its importance - Autonomy, Beneficence, Non-maleficence, Justice | 1. Outline the history and evolution of bioethics (C2)<br>2. Explain the cardinal principles of bioethics (C2)<br>3. Apply national and international bioethical principles (C3) | 2 |
| **Ethics in professional practice**<br>Principles of practice in respective profession. Privacy, confidentiality, shared decision making, informed consent, equality and equity, justice | 1. Outline the principles of ethics in professional practice - clinical, research, academics, administrative domains (C2)<br>2. Apply the principles of ethics in professional practice (C3) | |
| **ICMR Guidelines**<br>General principles, Responsible conduct of research, Risk benefit assessment | 1. Outline the general principles of ethics for conduct of research based on ICMR guidelines (C2)<br>2. Summarize the characteristics for responsible conduct of research (C2)<br>3. Identify potential ethical issues based on risk benefit analysis (C3) | 3 |
| **Informed Consent Process**<br>Components of informed consent document, Procedure in obtaining informed consent, Special situations, waivers, and proxy consent | 1. Explain the components and procedures of informed consent process (C2)<br>2. Apply suitable methods in obtaining informed consent (C3)<br>3. Distinguish special considerations of informed consent process for waivers and proxy consent (C4) | |
| **Roles and Responsibilities of IEC**<br>Ethical Review process, Classification of projects for review, Roles and responsibilities of members, Communications with investigators and authorities | 1. Outline the process of ethical review of research proposals (C2)<br>2. Relate the types of review based on the research project proposals (C2)<br>3. Summarize the roles and responsibilities of IEC and its members (C2)<br>4. Organize the mock ethical review meeting (C3) and examine the research proposal for ethical issues (C4) | 2 |

| Content | Competencies | Number of Hours |
|---|---|---|
| **Ethics in Special and Vulnerable Populations**<br>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)<br>2. Outline the characteristics of special and vulnerable population (C2)<br>3. Summarize the challenges for research in vulnerable population (C2)<br>4. Apply the ICMR guidelines for research in special and vulnerable population (C3) | 2 |
| **Conflict of Interest**<br>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)<br>2. Identify and solve potential Conflict of Interest (C3) | 3 |
| **Publication Ethics**<br>Importance of publishing, Authorship guidelines according to ICMJE, Plagiarism | 1. List the importance of publishing scholarly works (C4)<br>2. Examine the criteria of authorship based on ICMJE guidelines (C4)<br>3. Test the publication for plagiarism (C4) | |
| **Unit 2: Pedagogy** | | |
| **Principles of adult learning**<br>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)<br>2. Define and explain the components of curriculum (C2)<br>3. Outline the types of curricular frameworks (C2)<br>4. Identify the characteristics of curricular frameworks (C3) | 2 |
| **Taxonomy of learning**<br>Blooms Taxonomy: Knowledge, Psychomotor | 1. Classify domains of learning (C2)<br>2. Distinguish the levels of mastery for each learning domains (C4) | 2 |

| Content | Competencies | Number of Hours |
|---|---|---|
| and Affective domains, Specific Learning Objectives - Elements, construction, mapping of SLOs to course outcomes. | 3. Outline the elements of specific learning objectives (C3)<br>4. Organize specific learning objectives based on domains of learning (C3) | |
| **Teaching Methods**<br>Small Group Teaching: Group dynamics, Categories of SGT, Facilitating techniques, Generic & Specific SGT methods<br>Large Group Teaching: Lectures | 1. Outline small group teaching methods (C3)<br>2. Explain the generic and specific methods of small group teaching (C3)<br>3. Outline large group teaching methods (C3)<br>4. Explain the facilitation methods in large group lectures (C3)<br>5. Perform microteaching (P4) | 5 |
| **Learner Assessment**<br>Principles, Characteristics and Types of assessment - Formative/Summative, Tools, Blueprinting | 1. Outline the principles, characteristics and types of assessment (C3)<br>2. Identify appropriate tools for assessment. (C3)<br>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** | **UNIT 1: Ethics**<br>1. Beauchamp and Childress, Principles of Biomedical Ethics, Fourth Edition. Oxford. 1994.<br>2. Patricia A Marshall. Ethical challenges in study design and informed consent for health research in resource poor settings. World Health Organization. 2007.<br>3. National Ethical guidelines for Biomedical and Health Research involving human participants. Indian Council of Medical Research. 2017.<br><br>**UNIT 2: Pedagogy**<br>1. ABC of Learning and Teaching in Medicine. Editor(s): Peter Cantillon, Diana Wood, Sarah Yardley. Ed: 3<br>2. Understanding Medical Education: Evidence, Theory, and Practice, Editor(s): Tim Swanwick Kirsty Forrest Bridget C. O'Brien. Ed 3<br>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 (Paediatrics) |
| **Course Title** | **Foundations of Physiotherapy in Paediatrics** |
| **Course Code** | **PTH6702** |
| **Academic Year** | First |
| **Semester** | II |
| **Number of Credits** | 03 |
| **Course Prerequisite** | Students should have basic knowledge in applied anatomy, physiology and normal developmental process |
| **Course Synopsis** | The module is designed to provide basic understanding of normal growth and development and its implications on physical, intellectual, social and emotional well-being of children. It will help learners in understanding and interpreting the paediatric diagnostics. The module will lay emphasis on national health programs for children and ethical issues in paediatric rehabilitation. |

**Course Outcomes (COs):**
At the end of the course student shall be able to:

| | |
|---|---|
| **CO1** | Enumerate the basic genetics and embryological development (C2) |
| **CO2** | Explain the principles of normal growth and development (C2) |
| **CO3** | Discuss the principles and theories of motor control, motor learning and skill acquisition (C2) |
| **CO4** | Interpret the antenatal and paediatric investigations (C2) |
| **CO5** | Evaluate the motor developmental domain and identify developmental delays (C4) |

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

| **Cos** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | x | | | | | | | |
| **CO2** | x | | | | | | | |
| **CO3** | x | | | | | x | | |
| **CO4** | x | | | | | | | |
| **CO5** | x | | | | | x | | |

**Course Content and Outcomes**

| Content | Competencies | Number of Hours |
|---|---|---|
| **Unit 1** | | |
| **Basic concepts of Human Genetics** | 1. Outline the basic principles of Genetics (C2)<br>2. Explain the details of transcription, translocation and mutation (C2) | 2 |
| **Unit 2** | | |
| **Basic Embryology - Development of organ systems** | 1. Outline the basic embryological development (C2)<br>2. Explain the intrauterine development of the nervous system and the cardiopulmonary system (C2)<br>3. Illustrate the implications of interruption of normal embryological development (C2) | 2 |
| **Unit 3** | | |
| **Physical Growth Characteristics** | 1. Explain the anthropometric changes from birth through adolescence (C2)<br>2. Illustrate the implications of delay in the normal development of growth characteristics (C4) | 2 |
| **Unit 4** | | |
| **Principles of Normal Growth and Development** | 1. Outline the principles of normal development (C2)<br>2. Illustrate the developmental theories (C2) | 2 |
| **Unit 5** | | |
| **Principles and theories of Motor control, Motor Learning and Skill Acquisition** | 1. Outline the theories and principles of motor control (C2)<br>2. Explain the implications of the theories towards normal growth and development (C2) | 3 |
| **Unit 6** | | |
| **Posture and movement acquisition in children** | 1. Outline the developmental milestones (C2)<br>2. Analyze the typical development of a child based on the developmental domains (C4)<br>• Motor development<br>• Somato-sensory development<br>• Speech / language development<br>• Psychosocial development<br>• Oro-motor development<br>• Perceptive-cognitive development | 4 |

| Content | Competencies | Number of Hours |
|---|---|---|
| | • Play behavior | |
| **Unit 7** | | |
| **Developmental Reflexes** | 1. Outline the developmental reflexes and the normal span of integration of the reflexes (C2)<br>2. Explain the spatiotemporal and physical organisation of developmental reflexes (C2)<br>3. Infer the implications of normal integration and delay in the integration of the reflexes (C4) | 3 |
| **Unit 8** | | |
| **Developmental evaluation** | 1. Evaluate the developmental domains and identify developmental delays (C4)<br>2. Develop a rehabilitation plan based on ICF domains (C3) | 5 |
| **Unit 9** | | |
| **Antenatal/Biochemical investigations performed during Antenatal period and Labour** | Outline investigations performed in the Antenatal period and during Labour (C2)<br>**Investigations during antenatal period-**<br>• Dual Markers<br>• Tripple test<br>• Glucose Challenge & Tolerance Test<br>• Biophysical Profile<br>• Amniocentesis<br>• Chronic Villi Sampling<br>• Fetal echocardiography<br>**Investigations during labour** –<br>• Partogram<br>Non-Stress Test | 2 |
| **Unit 10** | | |
| **Basics of Paediatric investigations:** | Outline the different Paediatric investigations (C2)<br>• Blood parameters<br>• Radiographs<br>• Magnetic Resonance Imaging & Computed Tomography<br>• Pulmonary Function Tests<br>• Echocardiography<br>• Diagnostic tests for Genetic disorders | 2 |
| **Unit 11** | | |
| **Pharmacological management in** | 1. Outline the pharmacological management for variation in tone, | 2 |

| Content | Competencies | Number of Hours |
|---|---|---|
| **paediatrics** | seizures, asthma and other cardiopulmonary conditions (C2)<br>2. Interpret the implications of dosage regulation depending on the condition (C2) | |
| **Unit 12** | | |
| **Indian Public health initiatives for child health** | Explain the Public Health Initiatives for child health (C2)<br>• National immunization program<br>• Sarva Shiksha Abhiyan(SSA)<br>• Rashtriya Bal Swasthya Karyakram(RBSK) | 1 |
| **Unit 13** | | |
| **Ethical issues in Paediatric Rehabilitation** | 1. Outline the guidelines for research in children (C2)<br>2. Explain the concept of consent and assent (C2) | 1 |
| **Unit 14** | | |
| **Safety and infection control in neonatal and paediatric intensive care units** | 1. Explain the infection control practices and safety while working in the neonatal and paediatric Intensive Care Units (C2)<br>2. Outline the steps followed for Universal precautions (C2) | 1 |
| **Unit 15** | | |
| **Paediatric Basic Life Support** | Explain the steps involved in Paediatric Basic Life Support (C2) | 1 |
| **Unit 16** | | |
| **Parental education** | 1. Explain the importance of parental education (C2)<br>2. Outline the core components and importance of Family Centred Care (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 | 4 | 8 |
| Small group discussion (SGD) | 12 | 24 |
| Problem Based Learning (PBL) | 6 | 12 |
| Assessment | 4 | 8 |
| **Total** | **39** | **78** |

| **Assessment Methods** | | | | | | |
|---|---|---|---|---|---|---|
| **Formative** | | **Summative** | | | | |
| Presentations | | 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 | 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** | 1. Manu L Kothari,Lopa M Mehta,Sadhana S Roychoudhary Essentials of Human Genetics, Fifth edition Universities press<br>2. Lane Donnelley. Paediatric Imaging: The Fundamentals; Elsevier Health Sciences, 2009,Illustrated<br>3. Normal Development of Functional Motor skills-Rona Alexander<br>4. Normal and abnormal development-Mary R Fiorentino, Second printing<br>5. Motor control theory and practical application Anne Shumway-cook, Lippincott Williams second edition<br>6. Normal Child –Illingworth-Latest Edition<br>7. Reflex & Vestibular aspects of motor control, motor development & motor learning- CarolynB. Heriza, Susan J. Herdman<br>8. Motor skills - Acquisition in the First year. An illustrated guide to normal development -Lois Bly<br>9. Fetal & Neonatal Physiology Richard A. Polin, Vol 1and 2<br>10. Jughal Kishore. National Health Programs of India: National Policies & Legislations Related to Health Century Publications, 2005 Fifth Edition<br>11. ICMR Guidelines. Paediatric ethical issues;<br>12. AHA Guidelines. Paediatric Basic Life Support<br>13. Cardiorespiratory Physiotherapy: Adults and paediatrics by Eleanor Main & Linda Denehy; 5th Ed, Elsevier<br>14. Related scientific publications | | | | | |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **Course Title** | **Physiotherapy Clinical Practice in Paediatrics - I** |
| **Course Code** | **PTH6704** |
| **Academic Year** | First |
| **Semester** | II |
| **Number of Credits** | 12 |
| **Course Prerequisite** | Students should have basic knowledge in applied anatomy, applied physiology and physiotherapeutic skills. |
| **Course Synopsis** | This module is designed to apply fundamental and advanced knowledge in therapeutic sciences. Demonstrate comprehensive assessment techniques and interpret findings. Formulate and prescribe specific treatment plan. Monitor and re-evaluate treatment plans. 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 the normal development process and reflex maturation phases (C4, P5, A3) |
| **CO2** | Perform a detailed developmental evaluation of a child (C5, P5, A3) |
| **CO3** | Apply and choose an appropriate outcome measure for the evaluation and management of different Paediatric conditions (C3, P5, A3) |
| **CO4** | Practice basic life support and infection control practices (C5, P5, A3) |
| **CO5** | Practice ethical principles during assessment and treatment of children (C5, P6, 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** | | x | | | x | | | |
| **CO4** | | | x | | x | | | |
| **CO5** | | | | x | x | | | |

**Course Content and Outcomes**

| Content | Competencies | Number of Hours |
|---|---|---|
| **Unit 1** | | |
| **Physiotherapy evaluation in Pediatric conditions** | 1. Demonstrate the assessment of primitive reflexes and righting reactions in newborn and infants. (C4, P5, A3)<br>2. Justify and analyse the developmental milestones underlying the reflex maturation of brainstem and subcortical structures: (C4, P5, A3)<br>3. Demonstrate the domains of developmental evaluation (C5, P5, A3)<br>4. Analyze the typical development of a child based on developmental domains (C4, P5, A3)<br>5. Perform the specialized assessment methods for the neuromuscular, musculoskeletal and cardiopulmonary system (C5, P5, A3)<br>6. Choose outcome measures relevant to neonate, infant and children with neuromuscular, musculoskeletal and cardiopulmonary disorders (C3, P5, A2)<br>7. Demonstrate the assessment of physical characteristics in children (C4, P5, A3)<br>8. Interpret relevant maternal and pediatric investigations (C4, P5, A4)<br>9. Demonstrate the clinical reasoning and decision-making process for organizing the problem list and plan for management of pediatric conditions (C5, P5, A3)<br>10. Use culturally appropriate and playful communication with child and friendly communication with parent/caregiver while interviewing children (C5, P6, A4)<br>11. Discuss health related information with parents, caregivers, peers and health care professionals and displays ability to work as a team (C3, P5, A3)<br>12. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during evaluation (A4) | 312 |
| **Unit 2** | | |
| **ICF framework based outcome measures in Pediatric rehabilitation** | 1. Identify the psychometric properties of validated clinical outcome measures (C3, P5, A2)<br>2. Choose and apply the impairment-based outcome measures used in pediatric conditions (C3, P5, A2) | 78 |

| Content | Competencies | Number of Hours |
|---|---|---|
| | 3. Choose and apply the activity-based outcome measures used in pediatric conditions (C3, P5, A2)<br>4. Choose and apply the participation-based outcome measures used in pediatric conditions (C3, P5, A2)<br>5. Discuss health related information with clients, caregivers, peers and health care professionals and displays ability to work as a team (C3, P5, A3)<br>6. Display ethical and professional behavior (Autonomy, Beneficence and Justice) during evaluation (A4) | |
| **Unit 3** | | |
| **Clinical decision-making process for the management of pediatric disorders for e.g., Hypothesis-Oriented Algorithm for Clinicians II (HOAC)** | 1. Plan a comprehensive physical examination, demonstrate the Hypothesis-Oriented Algorithm for Clinicians II (HOAC) in making a clinical decision for management of pediatric disorders (C3, P5, A3)<br>2. Construct problem list and plan short term and long-term goals based on the evaluation findings (C3, P5, A3)<br>3. Determine the factors affecting the recovery, and also identify the predictors of recovery prognosis (C3, P5, A3)<br>4. Plan specific physiotherapy treatment techniques underlying the principles of motor control, learning and brain plasticity in pediatric conditions (C3, P5, A3)<br>5. Organize selecting and revising the treatment regime according to the recovery prognosis of the child (C3, P5, A3)<br>6. Discuss health related information with clients, caregivers, peers and health care professionals and displays ability to work as a team (C3, P5, A3)<br>7. Displays ethical and professional behavior (Autonomy, Beneficence) and Justice) during evaluation (A4) | 78 |
| | **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** | **CO5** |
| Case Presentations | x | x | x | x | x |
| Clinical performance | x | x | x | x | x |

| | |
|---|---|
| **Feedback Process** | Mid-Semester Feedback |
| | End-Semester Feedback |
| **Main Reference** | 1. Manu L Kothari,Lopa M Mehta,Sadhana S Roychoudhary Essentials of Human Genetics, Fifth edition Universities press<br>2. Lane Donnelley. Paediatric Imaging: The Fundamentals; Elsevier Health Sciences, 2009,Illustrated<br>3. Normal Development of Functional Motor skills-Rona Alexander<br>4. Normal and abnormal development-Mary R Fiorentino, Second printing<br>5. Motor control theory and practical application Anne Shumway-cook, Lippincott Williams second edition<br>6. Normal Child –Illingworth-Latest Edition<br>7. Reflex & Vestibular aspects of motor control, motor development & motor learning- CarolynB. Heriza, Susan J. Herdman<br>8. Motor skills - Acquisition in the First year. An illustrated guide to normal development -Lois Bly<br>9. Fetal & Neonatal Physiology Richard A. Polin, Vol 1and 2<br>10. Jughal Kishore. National Health Programs of India: National Policies & Legislations Related to Health Century Publications, 2005 Fifth Edition<br>11. ICMR Guidelines. Paediatric ethical issues;<br>12. AHA Guidelines. Paediatric Basic Life Support<br>13. Cardiorespiratory Physiotherapy: Adults and paediatrics by Eleanor Main & Linda Denehy; 5th Ed, Elsevier<br>14. Related scientific publications |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **Course Title** | **Research Progress in Paediatrics - I** |
| **Course Code** | **PTH6780** |
| **Academic Year** | First |
| **Semester** | II |
| **Number of Credits** | 02 |
| **Course Prerequisite** | Students should have basic knowledge for the application of research methodology for the project |
| **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 | | | | | |

**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 |
| **Unit 3** | | |
| **Document** | 1. Obtain, organize and store the documents | 06 |

| Content | Competencies | Number of Hours |
|---|---|---|
| **maintenance** | relevant to the study e.g. Informed Consent document, Ethical approvals, data collection forms (P4, A4) | |
| **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** | 1. Research for Physiotherapists: Project Design and Analysis - Caroline Hicks.<br>2. Foundations of Clinical Research by Leslie Gross Portney<br>3. Tests, Measurements and Research in Behavioural Sciences by A K Singh<br>4. Physical Therapy Research: Principles and Applications by Elizabeth Domholdt<br>5. Rehabilitation Research - E-Book: Principles and Applications by Russell Carter, Jay Lubinsky, et al.<br>6. Essentials of Research Methodology for all Physiotherapy and Allied Health Sciences Students by Ramalingam Thangamani A |

# SEMESTER - III

| COURSE CODE | : | COURSE TITLE |
|---|---|---|
| PTH7701 | : | Physiotherapy in General Paediatrics |
| PTH7703 | : | Physiotherapy Clinical Practice in Paediatrics - II |
| PTH7705 | : | Evidence Based Physiotherapy Practice in Paediatrics |
| PTH7770 | : | Research Progress in Paediatrics - II |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **Course Title** | **Physiotherapy in General Paediatrics** |
| **Course Code** | **PTH7701** |
| **Academic Year** | Second |
| **Semester** | III |
| **Number of Credits** | 03 |
| **Course Prerequisite** | Students should have basic knowledge in applied anatomy, physiology and physiotherapeutic skills in Paediatrics |
| **Course Synopsis** | This module is designed to help students have an advanced understanding of developmental milestones and play behavior. It will also detail the common musculoskeletal, cardiopulmonary and neurological conditions in children. The module will lay emphasis on detailed developmental assessment and physiotherapy management of children with musculoskeletal, cardiopulmonary and neurological conditions. |

**Course Outcomes (COs):**
At the end of the course student shall be able to:

| | |
|---|---|
| **CO1** | Outline the pathophysiology and describe the clinical features in Paediatric disorders (C2) |
| **CO2** | Examine the assessment procedures and evidence based physiotherapy interventions and rehabilitation of children with musculoskeletal, neurological and cardiopulmonary disorders (C4) |
| **CO3** | Distinguish the theoretical framework and clinical practice of traditional and modern neuro-physiotherapy approaches and cardiopulmonary physiotherapy techniques (C4) |
| **CO4** | Analyze the rationale, analysis and performance of fitness testing protocols and exercise prescription for children (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 | | | | | x | | |
| **CO4** | x | | | | | x | | |

**Course Content and Outcomes**

| Content | Competencies | Number of Hours |
|---|---|---|
| **Unit 1** | | |
| **Newborn / developmental surveillance and screening** | 1. Classify the outcome measures based on the ICF framework (C1)<br>2. Explain the test administration and psychometric properties of the outcome measures (C2)<br>3. Choose appropriate outcome measure for target population and age group (C3)<br>• Milani - Comparetti Motor Development Screening Test<br>• Denver II Development Screening Test<br>• Comprehensive Developmental Scales.<br>4. Gessell Developmental schedules<br>5. Bayley scales of Infant Development<br>6. Neonatal Behavioral Assessment Scale<br>• Neurological Examination of Full Term New Born Infant<br>• Brazelton Neonatal Behavioral Assessment Scale<br>• Neurological Assessment of Preterm & Full Term Infant by Dubowitz & Dubowitz<br>• Movement Assessment of Infants<br>• Test of Infant Motor Performance and Development<br>• Alberta Infant Motor Scale<br>• Infant Neonatal International Battery (INFANIB)<br>• Gross Motor Performance Measures<br>• Peabody Developmental Motor Scales<br>• Bruininks-Oseretsky Test of Motor Proficiency(BOTMP)<br>• Gross Motor Function Measure (GMFM)<br>• Paediatric Balance Scale (PBS)<br>• Sensory Profile<br>• Gillian Autism Rating Scale (GARS)<br>• Assessment of Functional Capabilities<br>• Paediatric Evaluation of Disability Inventory (PEDI)<br>• Functional Independence Measure for Children (WeeFIM) | 5 |
| **Unit 2** | | |
| **Musculoskeletal assessment in** | 1. Classify the outcome measures based on the ICF framework (C1) | 3 |

| Content | Competencies | Number of Hours |
|---|---|---|
| **Paediatrics** | • Paediatric Pain Profile (PPP)<br>• Edinburgh Visual Gait Score<br>• Selective Control Assessment of the Lower Extremity (SCALE)<br>• Gillette Functional Assessment Questionnaire<br>• Selective motor control scale (SMC)<br>• POSNA Paediatric Musculoskeletal Functional Health Questionnaire<br>• Observational Gait Assessment (RANCHO LOS AMIGOS)<br>2. Explain the test administration and psychometric properties of the outcome measures (C2)<br>3. Choose appropriate outcome measure for target population and age group (C3) | |
| **Unit 3** | | |
| **Cardiovascular Exercise Testing- Endurance, strength, flexibility and body composition) through various methods in children**<br><br>**Sports performance evaluation**<br><br>**Rationale for exercise prescription in children** | 1. Outline the rationale for exercise testing, sports performance evaluation and exercise prescription in children (C1)<br>2. Illustrate the steps involved in various exercise testing and sports performance evaluation methods in children using the ACSM guidelines (C2)<br>3. Analyze and interpret the findings of the exercise testing (C2) | 3 |
| **Unit 4** | | |
| **Disorders of Musculo-skeletal system** | 1. Classify the Musculo-skeletal disorders in Paediatrics (C1)<br>• Congenital Talipes Equino Varus (CTEV)<br>• Idiopathic Scoliosis<br>• Congenital anomalies - Hemimelia, Amelia<br>• Osteogenesis Imperfecta<br>• Arthrogryposis<br>• Perthe's Disease | 4 |

| Content | Competencies | Number of Hours |
|---|---|---|
| | • Developmental Dysplasia of Hip (DDH)<br>• Congenital Torticollis<br>2. Explain the etiology, pathophysiology and clinical features of Musculo-skeletal disorders (C2)<br>3. Outline the Medical and Surgical management of Musculo-skeletal disorders (C2)<br>4. Analyse the goals and its implications for the Physiotherapy management in Musculo-skeletal disorders (C4) | |
| **Unit 5** | | |
| **Disorders of Neurological system** | 1. Classify the Neurological disorders in Paediatrics (C1)<br>• Cerebral palsy<br>• Down syndrome<br>• Spinal dysraphism<br>• Traumatic Brain Injury (TBI)<br>• Obstetric Brachial Plexus Injury (OBPI)<br>2. Explain the etiology, pathophysiology and clinical features of Neurological disorders (C2)<br>3. Outline the Medical and Surgical management of Neurological disorders (C2)<br>4. Analyse the goals and its implications for the Physiotherapy management in Neurological disorders (C4) | 4 |
| **Unit 6** | | |
| **Disorders of Cardiopulmonary system (Congenital and acquired)** | 1. Classify the Cardiopulmonary disorders in Paediatrics (C1)<br>2. Explain the etiology, pathophysiology and clinical features of Cardiopulmonary disorders (C2)<br>3. Outline the Medical and Surgical management of Cardiopulmonary disorders (C2)<br>4. Analyse the goals and its implications for the Physiotherapy management in Cardiopulmonary disorders (C4) | 4 |
| **Unit 7** | | |
| **Neuro-physiotherapy approaches in Paediatric Rehabilitation** | 1. Explain the theoretical framework for neuro-physiotherapeutic approaches (C2)<br>• Roods approach<br>• Bobath and Neuro Developmental Therapy (NDT) | 5 |

| Content | Competencies | Number of Hours |
|---|---|---|
| | • Proprioceptive Neuromuscular Facilitation (PNF)<br>• Vojta concept<br>• Sensory Integration Therapy (SI)<br>• Myofascial Release (MFR)<br>• Functional Electrical Stimulation<br>• Technology based intervention(body weight support treadmill training, robotics, biofeedback and virtual reality)<br>• Constraint Induced Movement Therapy<br>• Aquatic therapy<br>2. Outline the principles and basic concepts of each neuro-physiotherapeutic approaches (C2)<br>3. Illustrate the rationale and use of neuro physiotherapy approaches in clinical practice (C2)<br>4. Analyse the clinical utility of the neuro-physiotherapeutic approaches for Paediatric conditions (C4) | |
| **Unit 8** | | |
| **Cardiopulmonary physiotherapy techniques treatment techniques** | 1. Explain the theoretical framework for cardiopulmonary physiotherapy approaches (C2)<br>• Lung expansion therapy<br>• Bronchial hygiene therapy/postural drainage<br>• Humidification, Oxygen therapy, Nebulization<br>2. Outline the principles and basic concepts of each cardiopulmonary physiotherapy approaches (C2)<br>3. Illustrate the rationale and use of cardiopulmonary physiotherapy techniques in clinical practice (C2)<br>4. Analyse the clinical utility of the cardiopulmonary physiotherapy approaches for Paediatric conditions (C4) | 2 |
| **Unit 9** | | |
| **Oromotor Rehabilitation** | 1. Outline the applied anatomy and applied physiology of the oromotor development (C2)<br>2. Illustrate the pathophysiology, causes and the clinical features of oromotor dysfunctions (C2)<br>3. Infer the implications of different strategies | 2 |

| Content | Competencies | Number of Hours |
|---|---|---|
| | for Oromotor Rehabilitation (C4) | |
| **Unit 10** | | |
| **Early intervention strategies in paediatric rehabilitation** | 1. Outline the factors influencing infants for the risk of developmental delay (C2)<br>2. Illustrate the rationale for early intervention strategies in paediatric rehabilitation (C2)<br>3. Analyse the planning and implementation of early intervention programs (C4) | 4 |
| **Unit 11** | | |
| **Orthotic and Adaptive/Assistive aids** | 1. Outline the principles and design of orthotic devices and adaptive/assistive aids in Paediatric rehabilitation (C2)<br>2. Apply the principles for planning, prescription and<br>training for use of orthotics and adaptive/assistive aids (C3) | 2 |
| **Unit 12** | | |
| **Physical Modalities in Paediatric Rehabilitation** | 1. Outline the indications, contraindications, therapeutic and physiological effects of physical agents used in Paediatrics (C2)<br>2. Analyse the rationale and the implications of use of physical modalities in Paediatrics (C4) | 1 |
| | **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 | | |
| Assessment | 4 | 8 | | |
| **Total** | **39** | **78** | | |
| **Assessment Methods** | | | | |
| **Formative** | **Summative** | | | |
| Presentations | Mid Semester/Sessional Exam (Theory ) | | | |
| | End Semester Exam (Theory) | | | |
| **Mapping of Assessment with COs** | | | | |
| **Nature of Assessment** | **CO1** | **CO2** | **CO3** | **CO4** |
| Mid Semester / Sessional Examination 1 | x | x | x | x |
| Presentations | x | x | x | x |
| End Semester Exam | x | x | x | x |

| | |
|---|---|
| **Feedback Process** | Mid-Semester Feedback |
| | End-Semester Feedback |
| **Main Reference** | 1. Roberta B Shepherd. Physiotherapy in Paediatrics; Heinemann Medical Books, 1980,3d Edition<br>2. Jan Stephen Tecklin. Paediatric Physical Therapy; Lippincott Williams and Wilkins; 5th edition edition (1 April 2014)<br>3. Suzan Campbell. Paediatric Neurologic Physical Therapy; Elsevier Health Sciences, Second Edition<br>4. Suzan Campbell, Robert Palisano, Margo Orlin. Physical Therapy for Children; Saunders 4th edtion<br>5. Sophie Levit. Treatment of Cerebral Palsy and Motor Delay; Wiley Blackwell 5th Edition<br>6. Neurodevelopmental therapy - approach - theoretical Foundations & principles of clinical practice-Janet M Howle<br>7. Ayres, A. Jean (2005). *Sensory integration and the child : understanding hidden sensory challenges* (25th anniversary ed., rev. and updated ed.). Los Angeles, CA: WPS. p. 5. ISBN 978-087424-437-3.<br>8. Sensory integration: Theory and practice –Book by Anita C Bundy, Elizabeth A. Murray second edition<br>9. High risk new born –MKC Nair<br>10. AHA Guidelines. Neonatal Resuscitation.<br>11. Pediatric PT Assessment Tools (http://pediatricapta.org)<br>12. Related scientific publications |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **Course Title** | **Physiotherapy Clinical Practice in Paediatrics - II** |
| **Course Code** | **PTH7703** |
| **Academic Year** | Second |
| **Semester** | III |
| **Number of Credits** | 12 |
| **Course Prerequisite** | Students should have basic knowledge in applied anatomy, applied physiology and physiotherapeutic skills in Paediatrics |
| **Course Synopsis** | This module is designed to –<br>1. Apply fundamental and advanced knowledge in therapeutic sciences<br>2. Demonstrate comprehensive assessment techniques and interpret findings<br>3. Formulate and prescribe specific treatment plan<br>4. Conduct a holistic and comprehensive treatment intervention safely and competently<br>5. Monitor and re-evaluate treatment plans<br>6. Use problem-solving principles and evidence-based practice in decision making of patient/client management<br>7.Identify the scope and limitations of professional practices, manage and refer appropriately<br>8.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 evaluation and management in Paediatric conditions (C4, P5, A3) |
| **CO2** | Demonstrate fitness testing protocols and exercise prescription for typical and atypically developing children and design a school-based exercise program for children (C2, P5, A3) |
| **CO3** | Apply validated outcome measures in the evaluation and management of children with musculoskeletal, neuromuscular and cardiopulmonary disorders (C3,P5,A2) |
| **CO4** | Demonstrate assessment procedures and evidence based physiotherapy interventions and rehabilitation of children with musculoskeletal, neurological and cardiopulmonary (C4,P5,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 of musculo-skeletal, cardio-pulmonary and neurological disorders in children** | 1. Demonstrate the relevant assessment methods specific to the clinical presentation of the musculo-skeletal, cardio-pulmonary and neurological disorders in children (C3, P6, A4)<br>2. Choose and apply an appropriate outcome measure for musculoskeletal, cardiopulmonary and neurological disorders in children (C3, P3, A3)<br>3. Explain and demonstrate the administration, scoring and interpretation of the outcome measures (C6, P4, A3)<br>4. Evaluate and plan an evidence based physiotherapy assessment of children with oromotor dysfunction (C5, P5, A3)<br>5. Explain the rationale and choice of appropriate orthotic devices and adaptive/assistive aids for Paediatric conditions (C2,P4,A4)<br>6. Discuss health related information with clients, caregivers, peers and health care professionals and displays ability to work as a team (C3, P5, A3)<br>7. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during evaluation (A4) | 156 |
| **Unit 2** | | |
| **Physiotherapy management of musculo-skeletal, cardio-pulmonary and neurological disorders in children** | 1. Construct a structured exercise program for children with musculo-skeletal, cardio-pulmonary and neurological disorders (C3, P4, A3)<br>2. Apply evidence based practice for use of specific treatment approaches and techniques in children with musculo-skeletal, cardio-pulmonary and neurological disorders (C4,P5,A3)<br>3. Plan a detailed evidence based | 234 |

| Content | Competencies | Number of Hours |
|---|---|---|
| | Physiotherapy intervention program for management of oromotor dysfunction in Paediatric conditions(C5, P5, A3)<br>4. Plan a detailed evidence based early intervention program for children at risk of developmental delay (C5, P5, A3)<br>5. Apply appropriate handling techniques of the children; and educate the parent, and the family members in a friendly communicative manner (C3, P5,A3)<br>6. Describe the principles and foundations of management using orthotic devices and adaptive/assistive aids (C2,P4,A4)<br>7. Demonstrate training of parent for the use of orthotic devices and adaptive/assistive aids in Paediatric conditions (C3,P5,A3)<br>8. Discuss health related information with clients, caregivers, peers and health care professionals and displays ability to work as a team (C3, P5, A3)<br>9. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during evaluation (A4) | |
| **Unit 3** | | |
| **Exercise testing, exercise prescription and sports performance evaluation in Paediatrics** | 1. Explain the special considerations for exercise testing, prescription and sports performance evaluation in Paediatrics (C2, P4, A3)<br>2. Apply exercise testing (endurance, strength, flexibility and body composition) among children (C3, P4, A3)<br>3. Construct a structured exercise prescription for children (C3)<br>4. Plan a sports performance (speed, agility, balance, reaction time, coordination, power) evaluation protocol for children (C3, P4, A3) | 78 |
| | **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 | | | | |
| Clinical performance | | | | | |
| **Mapping of Assessment with COs** | | | | | |
| **Nature of Assessment** | | **CO1** | **CO2** | **CO3** | **CO4** |
| Case Presentations | | x | x | x | x |
| End Semester Exam | | x | x | x | x |
| **Feedback Process** | Mid-Semester Feedback | | | | |
| | End-Semester Feedback | | | | |
| **Main Reference** | 1. Roberta B Shepherd. Physiotherapy in Paediatrics; Heinemann Medical Books, 1980,3d Edition<br>2. Jan Stephen Tecklin. Paediatric Physical Therapy; Lippincott Williams and Wilkins; 5th edition edition (1 April 2014)<br>3. Suzan Campbell. Paediatric Neurologic Physical Therapy; Elsevier Health Sciences, Second Edition<br>4. Suzan Campbell, Robert Palisano, Margo Orlin. Physical Therapy for Children; Saunders 4th edtion<br>5. Sophie Levit. Treatment of Cerebral Palsy and Motor Delay; Wiley Blackwell 5th Edition<br>6. Neurodevelopmental therapy - approach - theoretical Foundations & principles of clinical practice-Janet M Howle<br>7. Ayres, A. Jean (2005). *Sensory integration and the child : understanding hidden sensory challenges* (25th anniversary ed., rev. and updated ed.). Los Angeles, CA: WPS. p. 5. ISBN 978-087424-437-3.<br>8. Sensory integration: Theory and practice –Book by Anita C Bundy, Elizabeth A. Murray second edition<br>9. High risk new born –MKC Nair<br>10. AHA Guidelines. Neonatal Resuscitation.<br>11. *Pediatric PT Assessment Tools* (http://pediatricapta.org)<br>12. Related scientific publications | | | | |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **Course Title** | **Evidence Based Physiotherapy Practice in Paediatrics** |
| **Course Code** | **PTH7705** |
| **Academic Year** | Second |
| **Semester** | III |
| **Number of Credits** | 02 |
| **Course Prerequisite** | Students should have basic knowledge in evidence based Physiotherapy practice |
| **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 physiotherapy assessment and management of Obstetrics and gynecologic disorders. Through this course, students will learn to summarise recent trends and developments in Paediatrics (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 clinical practice (C5) |
| **CO2** | Appraise the process of evidence-based practice in obstetric and gynecological diseases across life span (C5) |
| **CO3** | Appraise the process of evidence-based practice lifestyle 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)<br>2. Explain the process of evidence-based practice (C4) | **2** |

| Content | Competencies | Number of Hours |
|---|---|---|
| | 3. Adopt a search strategy and appraise the available literature (C5) | |
| **Unit 2** | | |
| **Evidence based Physiotherapy assessment in Paediatrics** | 1. Identify, appraise and summarize evidence through systematic searches of databases for the assessment of Paediatric conditions (C5)<br>2. Recommend strategies for implementation of evidence based practice assessment of Paediatric conditions (C5) | **12** |
| **Unit 3** | | |
| **Evidence based Physiotherapy management in Paediatrics** | 1. Identify, appraise and summarize evidence through systematic searches of databases for the management of Paediatric conditions (C5)<br>2. Recommend strategies for implementation of evidence based practice management strategies of Paediatric conditions (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** | **Summative** | | |
| Presentation | 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)<br>2. http://www.apta.org/EvidenceResearch/EBPTools/<br>3. https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html<br>4. https://www.bmj.com/about-bmj/resources readers/publications/how-read-paper<br>5. Young JM, Solomon MJ. How to critically appraise an article. Nat Clin Pract Gastroenterol Hepatol. 2009;6(2):82-91 6. 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 (Paediatrics) |
| **Course Title** | **Research Progress in Paediatrics - II** |
| **Course Code** | **PTH7770** |
| **Academic Year** | Second |
| **Semester** | III |
| **Number of Credits** | 03 |
| **Course Prerequisite** | Students should have basic knowledge on Research Project |
| **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 procedure approved by the approval committees (P5, A3) | 39 |

| 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 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** | 1. Research for Physiotherapists: Project Design and Analysis –Caroline Hicks.<br>2. Foundations of Clinical Research by Leslie Gross Portney<br>3. Tests, Measurements and Research in Behavioural Sciences by A K Singh<br>4. Physical Therapy Research: Principles and Applications by Elizabeth Domholdt<br>5. Rehabilitation Research - E-Book: Principles and Applications by Russell Carter, Jay Lubinsky, et al.<br>6. Essentials of Research Methodology for all Physiotherapy and Allied Health Sciences Students by Ramalingam Thangamani A |

# SEMESTER - IV

# Option1: Elective in Paediatric Neurology

| | | |
|---|---|---|
| **COURSE CODE** | **:** | **COURSE TITLE** |
| **PTH7712** | **:** | **Physiotherapy in Paediatric Neurology** |
| **PTH7714** | **:** | **Clinical practice in Paediatric Neurology** |
| **PTH7780** | **:** | **Research project in Paediatrics** |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **Course Title** | **Physiotherapy in Paediatric Neurology** |
| **Course Code** | **PTH7712** |
| **Academic Year** | Second |
| **Semester** | IV |
| **Number of Credits** | 03 |
| **Course Prerequisite** | Students should have advanced knowledge in application of Paediatric physiotherapy skills |
| **Course Synopsis** | The module will help in understanding of brain growth and development and factors influencing it. It will describe in the detail the paediatric neurological conditions. The module will lay emphasis on detailed assessment and physiotherapy management of children with neurological conditions. |

**Course Outcomes (COs):**
At the end of the course student shall be able to:

| | |
|---|---|
| **CO1** | Explain the normal and abnormal growth and development across from birth to adolescence (C2) |
| **CO2** | Describe the pathophysiology and clinical features in paediatric neurological conditions (C2) |
| **CO3** | Outline the electrodiagnostic investigations and detailed physiotherapy assessment in paediatric neurological conditions (C2) |
| **CO4** | Summarize the implications of pharmacological management in clinical decision making (C2) |
| **CO5** | Plan a detailed evidence-based physiotherapy intervention program for paediatric neurological conditions (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 | | | | | | | |
| **CO4** | x | | | | | | | |
| **CO5** | x | | | | | x | | |

**Course Content and Outcomes**

| Content | Competencies | Number of Hours |
|---|---|---|
| **Unit 1** | | |
| **Early brain development and developmental psychobiology** | 1. Explain the neurophysiology and neuroanatomy of early brain development (C2)<br>2. Summarize the developmental psychobiology during early stages of growth and maturation (C2) | 2 |
| **Unit 2** | | |
| **Physical growth & development in atypically developing children across lifespan** | 1. Explain the physical growth and motor development in atypically developing children across lifespan (C2)<br>2. Interpret the scores of outcome measures to discriminate the motor abilities of children (C5) | 2 |
| **Unit 3** | | |
| **Cerebral Palsy** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation based on the classification of Cerebral Palsy (C2)<br>2. Outline the medical and surgical management of children with Cerebral Palsy (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management of children with Cerebral Palsy (C4) | 6 |
| **Unit 4** | | |
| **Acute Brain Injury in Childhood** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation based on the classification of acute brain injury (C2)<br>2. Outline the medical and surgical management of children with acute brain injury (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management of children with acute brain injury (C4) | 3 |
| **Unit 5** | | |
| **Minimal Brain Dysfunction, Learning Disability,** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation based on the classification (C2)<br>2. Outline the medical management (C2) | 3 |

| Content | Competencies | Number of Hours |
|---|---|---|
| **Attention Deficit, Autism, Developmental Coordination Disorder Intellectual Disability** | 3. Analyze and plan an evidence-based physiotherapy assessment and management (C4) | |
| **Unit 6** | | |
| **Genetic Diseases with Emphasis on Down Syndrome and Inborn errors of metabolism** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation of children with Down Syndrome (C2)<br>2. Outline the medical and surgical management of children with Down Syndrome (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management of children with Down Syndrome (C4) | 3 |
| **Unit 7** | | |
| **Hydrocephalus** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation based on the classification of congenital Hydrocephalus (C2)<br>2. Outline the medical and surgical management of children with congenital Hydrocephalus (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management of children with congenital Hydrocephalus (C4) | 3 |
| **Unit 8** | | |
| **Neuromuscular Disorders in Childhood** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation based on the classification of neuromuscular disorders in children (C2)<br>2. Outline the medical and surgical management of neuromuscular disorders in children (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management of neuromuscular disorders in children (C4) | 3 |
| **Unit 9** | | |
| **Brachial Plexus Injury** | 1. Explain the etiology(obstetric and traumatic), risk factors, pathophysiology | 3 |

| Content | Competencies | Number of Hours |
|---|---|---|
| | and clinical presentation based on the classification of obstetric brachial plexus injury (C2)<br>2. Outline the surgical management of obstetric brachial plexus injury (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management of obstetric brachial plexus injury (C4) | |
| **Unit 10** | | |
| **Paediatric Brain and Spinal cord Tumors** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation based on the classification of paediatric brain and spinal cord tumors (C2)<br>2. Outline the medical and surgical management of paediatric brain and spinal cord tumors (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management of paediatric brain and spinal cord tumors (C4) | 3 |
| **Unit 11** | | |
| **Electro-diagnosis in Paediatrics** | 1. Enumerate the common electrodiagnostic investigations related to Paediatric Neurological conditions (C1)<br>• Electromyography<br>• Nerve Conduction Studies<br>• Evoked Potentials<br>2. Outline the instrumentation and procedure for electrodiagnostic testing (C2)<br>3. Relate the clinical presentation with the electrodiagnostic findings (C2) | 2 |
| **Unit 12** | | |
| **Adaptive Equipment assessment and prescription for Physically Challenged Children** | Evaluate, plan and prescribe orthotic devices and adaptive/assistive aids in Paediatric neurological conditions (C5) | 2 |
| **Unit 13** | | |
| **Community Integration of children with disabilities** | Explain the community reintegration of children with disabilities (C2) | 2 |
| **Unit 14** | | |
| **Pharmacological management in** | 1. Explain the pharmacological management for paediatric neurological | 2 |

| Content | Competencies | Number of Hours |
|---|---|---|
| **paediatric neurological conditions** | conditions (C2)<br>2. Summarize the implications of drug dosage on the clinical presentation (C4) | |
| | **Total** | **39** |

| **Learning Strategies, Contact Hours and Student Learning Time (SLT)** | | | | | | |
|---|---|---|---|---|---|---|
| **Learning Strategies** | **Contact Hours** | **Student Learning Time (SLT)** | | | | |
| Lecture | 13 | 26 | | | | |
| Seminar | 4 | 8 | | | | |
| Small group discussion (SGD) | 12 | 24 | | | | |
| Problem Based Learning (PBL) | 6 | 12 | | | | |
| Assessment | 4 | 8 | | | | |
| **Total** | **39** | **78** | | | | |
| **Assessment Methods** | | | | | | |
| **Formative** | **Summative** | | | | | |
| Presentations | 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 | 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** | 1. Manu L Kothari, Lopa M Mehta, Sadhana S Roychoudhary Essentials of Human Genetics, Fifth edition Universities press<br>2. Lane Donnelley. Paediatric Imaging: The Fundamentals; Elsevier Health Sciences, 2009,Illustrated<br>3. Jughal Kishore. National Health Programs of India: National Policies & Legislations Related to Health Century Publications, 2005 Fifth Edition<br>4. Suzann K. Campbell Decision Making in Paediatric Neurologic Physical Therapy, 1e (Clinics in Physical Therapy) 1st Edition<br>5. Developmental co-ordination Disorder-Cermak<br>6. Roberta B Shepherd. Physiotherapy in Paediatrics; Heinemann Medical Books, 1980,3d Edition<br>7. Jan Stephen Tecklin. Paediatric Physical Therapy; Lippincott Williams and Wilkins; 5th edition edition (1 April 2014)<br>8. Electro-diagnosis in diseases of nerve and muscle by Kimura J Oxford University press 2001<br>9. Related scientific publications | | | | | | |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **Course Title** | **Clinical Physiotherapy Practice in Paediatric Neurology** |
| **Course Code** | **PTH7714** |
| **Academic Year** | Second |
| **Semester** | IV |
| **Number of Credits** | 12 |
| **Course Prerequisite** | Students should have advanced knowledge in application of Paediatric physiotherapy skills |
| **Course Synopsis** | The module is designed to:<br>1. Apply fundamental and advanced knowledge in therapeutic sciences<br>2. Demonstrate comprehensive assessment techniques and interpret findings<br>3. Formulate and prescribe specific treatment plan<br>4. Conduct a holistic and comprehensive treatment intervention safely and competently<br>5. Monitor and re-evaluate treatment plans<br>6. Use problem-solving principles and evidence-based practice in decision making of patient/client management<br>7.Identify the scope and limitations of professional practices, manage and refer appropriately<br>8.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** | Plan and demonstrate a detailed evidence based Physiotherapy assessment and intervention program for children with Neurological disorders (C4, P5, A3) |
| **CO2** | Interpret the findings from Electrodiagnostic investigations in children with Neurological disorders (C3,P5,A3) |
| **CO3** | Demonstrate the assessment and prescription of adaptive equipment in children with Neurological Disorders (C3, P5, A3) |
| **CO4** | Apply outcome measures in the evaluation and management of Children with Neurological disorders (C3,P5,A2) |

| 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 pediatric neurological conditions** | 1. Demonstrate the relevant assessment methods specific to the clinical presentation of the pediatric neurological conditions (C3, P6, A4)<br>2. Choose and apply an appropriate outcome measure for pediatric neurological conditions (C3, P3, A3)<br>3. Explain and demonstrate the administration, scoring and interpretation of the outcome measures (C6, P4, A3)<br>4. Explain the rationale and choice of appropriate orthotic devices and adaptive/assistive aids for pediatric neurological conditions (C2,P4,A4)<br>5. Discuss health related information with clients, caregivers, peers and health care professionals and displays ability to work as a team (C3, P5, A3)<br>6. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during evaluation (A4) | 234 |
| **Unit 2** | | |
| **Physiotherapy management in pediatric neurological conditions** | 1. Construct a structured exercise program for children with neurological conditions (C3, P4, A3)<br>2. Apply evidence based practice for use of specific treatment approaches and techniques in children with neurological disorders (C4,P5,A3)<br>3. Perform a detailed evidence based early intervention program for children at risk of developmental delay (C5, P5, A3)<br>4. Apply appropriate handling techniques of the children; and educate the parent, and the family members in a friendly communicative manner (C3, P5,A3) | 234 |

| Content | Competencies | Number of Hours |
|---|---|---|
| | 5. Describe the principles and foundations of management using orthotic devices and adaptive/assistive aids (C2,P4,A4)<br>6. Demonstrate training of parent for the use of orthotic devices and adaptive/assistive aids in paediatric neurological conditions (C3,P5,A3)<br>7. Discuss health related information with clients, caregivers, peers and health care professionals and displays ability to work as a team (C3, P5, A3)<br>8. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during evaluation (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 (Pratical) |
| 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. Manu L Kothari,Lopa M Mehta,Sadhana S Roychoudhary Essentials of Human Genetics, Fifth edition Universities press<br>2. Lane Donnelley. Paediatric Imaging: The Fundamentals; Elsevier Health Sciences, 2009,Illustrated<br>3. Jughal Kishore. National Health Programs of India: National |

| | |
|---|---|
| | Policies & Legislations Related to Health Century Publications, 2005 Fifth Edition<br>4. Suzann K. Campbell Decision Making in Paediatric Neurologic Physical Therapy, 1e (Clinics in Physical Therapy) 1st Edition<br>5. Developmental co-ordination Disorder-Cermak<br>6. Roberta B Shepherd. Physiotherapy in Paediatrics; Heinemann Medical Books, 1980,3d Edition<br>7. Jan Stephen Tecklin. Paediatric Physical Therapy; Lippincott Williams and Wilkins; 5th edition edition (1 April 2014)<br>8. Electro-diagnosis in diseases of nerve and muscle by Kimura J Oxford University press 2001<br>9. Related scientific publications |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **Course Title** | **Research Project in Paediatrics** |
| **Course Code** | **PTH7780** |
| **Academic Year** | Second |
| **Semester** | IV |
| **Number of Credits** | 05 |
| **Course Prerequisite** | Students should have advanced knowledge in application of research methodology |
| **Course Synopsis** | 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. |

**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** | 1. Perform data entry and prepare for analysis in statistical software (P4) | 26 |
| **Unit 2** | | |
| **Statistical analysis** | 1. Perform appropriate statistical tests and interprets the results (C5,P4) is the student expected to do the analysis | 13 |
| **Unit 3** | | |
| **Dissertation and Manuscript writing** | 1. Prepare the dissertation document according to institutional guidelines (P4)<br>2. Prepares manuscript for submission to an indexed journal (P4) | 52 |
| **Unit 4** | | |
| **Dissertation presentation** | 1. Present and defend the dissertation to the relevant scientific committee(s) (P4, A3) | 13 |
| **Unit 5** | | |
| **Closure report** | 1. 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** | 1. Research for Physiotherapists: Project Design and Analysis Caroline Hicks.<br>2. Foundations of Clinical Research by Leslie Gross Portney<br>3. Tests, Measurements and Research in Behavioural Sciences by A K Singh<br>4. Physical Therapy Research: Principles and Applications by Elizabeth Domholdt<br>5. Rehabilitation Research - E-Book: Principles and Applications by Russell Carter, Jay Lubinsky, et al.<br>6. Essentials of Research Methodology for all Physiotherapy and Allied Health Sciences Students by Ramalingam Thangamani A<br>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 Neonatal and Paediatric Respiratory Care

| COURSE CODE | : | COURSE TITLE |
|---|---|---|
| PTH7722 | : | Physiotherapy in Neonatal and Paediatric Respiratory Care |
| PTH7724 | : | Clinical Practice in Neonatal and Paediatric Respiratory Care |
| PTH7780 | : | Research Project in Paediatrics |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **Course Title** | **Physiotherapy in Neonatal and Paediatric Respiratory Care** |
| **Course Code** | **PTH7722** |
| **Academic Year** | Second |
| **Semester** | IV |
| **Number of Credits** | 03 |
| **Course Prerequisite** | Students should have advanced knowledge in application of Paediatric physiotherapy skills |
| **Course Synopsis** | The module will help in understanding development of cardiopulmonary system and factors influencing it. It will describe in the detail the neonatal and paediatric cardiopulmonary conditions. The module will lay emphasis on detailed assessment and physiotherapy management of children with musculoskeletal, cardiopulmonary and neurological conditions admitted in critical care unit. |

**Course Outcomes (COs):**
At the end of the course student shall be able to:

| | |
|---|---|
| **CO1** | Enumerate the stages in the intrauterine development of cardiopulmonary system (C2) |
| **CO2** | Explain the pathophysiology of neonatal and paediatric cardiopulmonary conditions (C2) |
| **CO3** | Outline the electrodiagnostic investigations and detailed physiotherapy assessment in paediatric cardiopulmonary conditions (C2) |
| **CO4** | Summarize the implications of pharmacological management in paediatric cardiopulmonary conditions for clinical decision making (C2) |
| **CO5** | Plan a detailed evidence-based physiotherapy intervention program for paediatric cardiopulmonary conditions (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 | | | | | | | |
| **CO4** | x | | | | | | | |
| **CO5** | x | | | | | x | | |

**Course Content and Outcomes**

| Content | Competencies | Number of Hours |
|---|---|---|
| **Unit 1** | | |
| **Cardiopulmonary system - Intrauterine development** | 1. Explain the intrauterine development of the cardiopulmonary system (C2) | 2 |
| **Unit 2** | | |
| **Genetics of Cardiopulmonary disorders** | 1. Outline the genetic basis of cardiopulmonary disorders (C2)<br>2. Explain the cardiopulmonary disorders related to genetic syndromes (C2) | 3 |
| **Unit 3** | | |
| **Assessment, monitoring, clinical reasoning and outcome measures in Neonatal and Paediatric intensive care** | 1. Outline the outcome measures used in neonatal and paediatric intensive care units (C2)<br>2. Summarize the advantages and disadvantages of the outcome measures (C2)<br>3. Explain the assessment and monitoring of neonates and children in the ICU (C2) | 3 |
| **Unit 4** | | |
| **Neonatal / Paediatric Cardiac conditions** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation based on the classification of neonatal/paediatric cardiac conditions (C2)<br>2. Outline the medical and surgical management in neonatal/paediatric cardiac conditions (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management in neonatal/paediatric cardiac conditions (C4) | 3 |
| **Unit 5** | | |
| **Neonatal /paediatric Respiratory Diseases** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation based on the classification of neonatal/paediatric respiratory diseases (C2)<br>• Cystic Fibrosis<br>• Respiratory distress Syndrome,<br>• Bronco Pulmonary Dysplasia<br>• Meconium Aspiration Syndrome<br>• Neonatal /Congenital Pneumonia<br>• Persistent pulmonary Hypertension of the newborn | 4 |

| Content | Competencies | Number of Hours |
|---|---|---|
| | • Bronchiolitis<br>• Respiratory Tract Disorders<br>• Parenchymal Lung Diseases<br>• Tuberculosis<br>• Asthma<br>• Congenital Abnormalities of Chest<br>2. Outline the medical and surgical management in neonatal/paediatric respiratory diseases (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management in neonatal/paediatric respiratory diseases (C4) | |
| **Unit 6** | | |
| **Early intervention and High risk follow up clinic** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation (C2)<br>2. Outline the medical and surgical management of high risk infants (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management of high risk infants (C4) | 4 |
| **Unit 7** | | |
| **Burns in Children** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation based on the classification of burns in children (C2)<br>2. Outline the medical and surgical management of children with burns (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management of children with burns (C4) | 3 |
| **Unit 8** | | |
| **Hematology / Oncology-Cancers, Immune Deficiency Syndrome** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation based on the classification (C2)<br>2. Outline the medical and surgical management of children (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management of children (C4) | 3 |
| **Unit 9** | | |
| **Endocrine & Metabolic Disorders in Paediatrics** | 1. Explain the etiology, risk factors, pathophysiology and clinical presentation based on the classification of endocrine | 3 |

| Content | Competencies | Number of Hours |
|---|---|---|
| | and metabolic disorders in children(C2)<br>2. Outline the medical and surgical management of children with endocrine and metabolic disorders (C2)<br>3. Analyze and plan an evidence-based physiotherapy assessment and management of children with endocrine and metabolic disorders (C4) | |
| **Unit 10** | | |
| **Neonatal and paediatric cardio respiratory investigations and its implications for physiotherapy** | 1. Enumerate the common electrodiagnostic investigations related to paediatric cardiorespiratory investigations (C1)<br>• Chest Radiographs<br>• Pulmonary Function Tests<br>• Echocardiography<br>• Blood investigations<br>2. Outline the instrumentation and procedure for paediatric cardiorespiratory investigations (C2)<br>3. Relate the clinical presentation with the paediatric cardiorespiratory investigations (C2) | 4 |
| **Unit 11** | | |
| **Exercise prescription & training for Physical Fitness and sports performance in paediatrics** | 1. Apply the exercise prescription, physical fitness training and sports performance in paediatrics according to the ACSM guidelines (C3)<br>• Typically developing children<br>• Children with developmental disabilities | 3 |
| **Unit 12** | | |
| **Immunization programs for childhood respiratory infections** | 1. Explain the immunization programs for childhood respiratory conditions and the schedule for the same (C2) | 2 |
| **Unit 13** | | |
| **Pharmacological management in neonatal and paediatric cardiopulmonary conditions** | 1. Explain the pharmacological management for paediatric cardiopulmonary conditions (C2)<br>2. Summarize the implications of drug dosage on the clinical presentation (C4) | 2 |
| | **Total** | **39** |

| **Learning Strategies, Contact Hours and Student Learning Time (SLT)** | | |
|---|---|---|
| **Learning Strategies** | **Contact Hours** | **Student Learning Time (SLT)** |
| Lecture | 13 | 26 |
| Seminar | 4 | 8 |
| Small group discussion (SGD) | 12 | 24 |
| Problem Based Learning (PBL) | 6 | 12 |
| Assessment | 4 | 8 |
| **Total** | **39** | **78** |

| **Assessment Methods** | |
|---|---|
| **Formative** | **Summative** |
| Presentations | 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 | 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** | 1. Cardiovascular and Pulmonary Physical Therapy: Evidence to Practice by Donna Frownfelter & Elizabeth Dean; 5th Ed, Elsevier (2012)<br>2. Essentials of Cardiopulmonary Physical Therapy by Hillegass Ellen; 4th Ed, Elsevier (2017)<br>3. Physiotherapy for Respiratory & Cardiac Problems Jennifer A. pryor, S. Ammani Prasad- 3rd Edition<br>4. Cardiorespiratory Physiotherapy: Adults and paediatrics by Eleanor Main & Linda Denehy; 5th Ed, Elsevier<br>5. Paediatric Respiratory Care A guide for physiotherapists and health professionals, **Hussey**, Juliette, **Prasad**, S. Ammani<br>6. Neonatal and paediatric textbook<br>7. Related scientific publications |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **Course Title** | **Clinical Physiotherapy Practice in Neonatal and Paediatric Respiratory Care** |
| **Course Code** | **PTH7724** |
| **Academic Year** | Second |
| **Semester** | IV |
| **Number of Credits** | 12 |
| **Course Prerequisite** | Students should have advanced knowledge in application of Paediatric physiotherapy skills |
| **Course Synopsis** | This module is designed to apply fundamental and advanced knowledge in therapeutic sciences. Demonstrate comprehensive assessment techniques and interpret findings. Formulate and prescribe specific treatment plan. 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. Identify the scope and limitations of professional practices, manage and refer appropriately. 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** | Plan and demonstrate a detailed evidence based Physiotherapy assessment and intervention program for neonate and children with cardiorespiratory disorders (C4, P5, A3) |
| **CO2** | Interpret the findings from Electrodiagnostic investigations in children with cardiorespiratory disorders (C3,P5,A3) |
| **CO3** | Demonstrate the assessment and prescription of adaptive equipment in children with cardiorespiratory Disorders (C3, P5, A3) |
| **CO4** | Apply outcome measures in the evaluation and management of Children with cardiorespiratory disorders (C3,P5,A2) |

**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 neonatal and paediatric intensive care** | 1. Demonstrate the relevant assessment methods specific to the clinical presentation of the neonatal and pediatric conditions (C3, P6, A4)<br>2. Choose and apply an appropriate outcome measure for neonatal and pediatric conditions (C3, P3, A3)<br>3. Explain and demonstrate the administration, scoring and interpretation of the outcome measures (C6, P4, A3)<br>4. Discuss health related information with clients, caregivers, peers and health care professionals and displays ability to work as a team (C3, P5, A3)<br>5. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during evaluation (A4) | 234 |
| **Unit 2** | | |
| **Physiotherapy management in neonatal and paediatric intensive care** | 1. Construct a structured exercise program for children admitted in neonatal and paediatric intensive care (C3, P4, A3)<br>2. Apply evidence based practice for use of specific treatment approaches and techniques in children admitted in neonatal and paediatric intensive care (C4,P5,A3)<br>3. Apply appropriate handling techniques of the children; and educate the parent, and the family members in a friendly communicative manner (C3, P5,A3)<br>4. Describe the principles and foundations of management using orthotic devices and adaptive/assistive aids for children admitted in neonatal and paediatric intensive care (C2,P4,A4)<br>5. Demonstrate training of parent for the use of orthotic devices and adaptive/assistive aids for children admitted in neonatal and paediatric intensive care (C3,P5,A3)<br>6. Discuss health related information with clients, caregivers, peers and health care professionals and displays ability to work as a team (C3, P5, A3)<br>7. Display ethical and professional behaviour (Autonomy, Beneficence and Justice) during evaluation (A4) | 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 | 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. Cardiovascular and Pulmonary Physical Therapy: Evidence to Practice by Donna Frownfelter & Elizabeth Dean; 5th Ed, Elsevier (2012)<br>2. Essentials of Cardiopulmonary Physical Therapy by Hillegass Ellen; 4th Ed, Elsevier (2017)<br>3. Physiotherapy for Respiratory & Cardiac Problems - Jennifer A. Pryor, S. Ammani Prasad- 3rd Edition<br>4. Cardiorespiratory Physiotherapy: Adults and paediatrics by Eleanor Main & Linda Denehy; 5th Ed, Elsevier<br>5. Paediatric Respiratory Care – A guide for physiotherapists and health professionals, **Hussey**, Juliette, **Prasad**, S. Ammani<br>6. Neonatal and paediatric textbook<br>7. Related scientific publications |

| **Manipal College of Health Professions** | |
|---|---|
| **Name of the Department** | Physiotherapy |
| **Name of the Program** | Master of Physiotherapy (Paediatrics) |
| **Course Title** | **Research Project in Paediatrics** |
| **Course Code** | **PTH7780** |
| **Academic Year** | Second |
| **Semester** | IV |
| **Number of Credits** | 05 |
| **Course Prerequisite** | Students should have advanced knowledge in application of research methodology |
| **Course Synopsis** | 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. |

**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** | 1. Perform data entry and prepare for analysis in statistical software (P4) | 26 |
| **Unit 2** | | |
| **Statistical analysis** | 1. Perform appropriate statistical tests and interprets the results (C5,P4) is the student expected to do the analysis | 13 |
| **Unit 3** | | |
| **Dissertation and Manuscript writing** | 1. Prepare the dissertation document according to institutional guidelines (P4)<br>2. Prepares manuscript for submission to an indexed journal (P4) | 52 |
| **Unit 4** | | |
| **Dissertation presentation** | 1. Present and defend the dissertation to the relevant scientific committee(s) (P4, A3) | 13 |
| **Unit 5** | | |
| **Closure report** | 1. 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** | 1. Research for Physiotherapists: Project Design and Analysis –Caroline Hicks.<br>2. Foundations of Clinical Research by Leslie Gross Portney<br>3. Tests, Measurements and Research in Behavioural Sciences by A K Singh<br>4. Physical Therapy Research: Principles and Applications by Elizabeth Domholdt<br>5. Rehabilitation Research - E-Book: Principles and Applications by Russell Carter, Jay Lubinsky, et al.<br>6. Essentials of Research Methodology for all Physiotherapy and Allied Health Sciences Students by Ramalingam Thangamani A<br>NOTE: this is not an exhaustive list of references and there will be other textbooks and articles which should be referenced as well |

## 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 | **PTH6770** | Research Proposal in Paediatrics | 2 | CO1 | CO1 CO2 | | | CO2 | | | |
| II | **EPG6201** | Ethics and Pedagogy | 2 | CO1 CO2 CO3 CO4 CO5 | CO4 | | CO1 CO2 CO3 CO5 | | | | |
| II | **PTH6702** | Foundations of Physiotherapy in Paediatrics | 3 | CO1 CO2 CO3 CO4 CO5 | | | | | CO3 CO5 | | |
| II | **PTH6704** | Physiotherapy clinical practice in Paediatrics - I | 12 | | CO1 CO2 CO3 | CO4 | CO5 | CO1 CO2 CO3 CO4 CO5 | | | |
| II | **PTH6780** | Research progress in Paediatrics - I | 2 | | CO2 | CO2 | CO1 | | CO1 | | |
| III | **PTH7701** | Physiotherapy in general Paediatrics | 3 | CO1 CO2 CO3 CO4 | | | | | CO2 CO3 CO4 | | |
| III | **PTH7703** | Physiotherapy clinical practice in Paediatrics – II | 12 | | CO1 CO2 CO3 CO4 | | | CO1 CO2 CO3 | CO4 | | |
| III | **PTH7705** | Evidence based physiotherapy practice in Paediatrics | 2 | CO2 CO3 | | | | | CO1 CO2 CO3 | CO1 | |
| III | **PTH7770** | Research Progress in Paediatrics - II | 3 | CO1 | CO2 CO3 | CO2 | | CO2 | CO3 | | |
| IV | **PTH7712** | Physiotherapy in Paediatric Neurology | 3 | CO1 CO2 | | | | | CO2 CO5 | | |

| Sem. | Course Code | Course Title | Credits | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CO3<br>CO4<br>CO5 | | | | | | | |
| IV | **PTH7714** | Clinical Physiotherapy in Paediatric Neurology | 12 | | CO2<br>CO3<br>CO4 | CO2 | | CO3 | CO1<br>CO4 | | CO1 |
| IV | **PTH7780** | Research Project in Paediatrics | 5 | CO1 | CO1<br>CO3 | CO3 | | | CO2 | CO2 | |
| IV | **PTH7722** | Physiotherapy in Neonatal and Paediatric Respiratory Care | 3 | CO1<br>CO2<br>CO3<br>CO4<br>CO5 | | | | | CO2<br>CO5 | | |
| IV | **PTH7724** | Clinical Physiotherapy in Neonatal and Paediatric Respiratory Care | 12 | | CO2<br>CO3<br>CO4 | CO2 | | CO3 | CO1<br>CO4 | | CO1 |
| IV | **PTH7780** | Research Project in Paediatrics | 5 | CO1 | CO1<br>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.

8.2 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).

8.3 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**