**Course Description**

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| **Course Title** | | | | Nutrition and Metabolic Disorders | **Course Code** | **BNDL05** |
| **Program** | | | | Therapeutic Nutrition and Dietetic | **Level** | 3rd level |
| **Credit Hours** | | | | 2 | **Pre-requisites** |  |
| **Course Description:** | | | | | | |
| This course provides the students with the basic information concerning the biochemical pathways, pathophysiology and possible factors that are involved in the development of different inborn errors of metabolic diseases of neonatal and newly born infants as carbohydrates, glycogen storage disorder, phenylketonuria, Maple syrup urine disease, glutaric acidemia, organic acids and purine and pyrimidine metabolism disorders. The course provides an understanding of the major clinical manifestations of inborn errors of metabolism provides the basis for knowing when to consider the diagnosis and intervention with the appropriate medical and nutritional therapies, and that by omitting the offending nutrients from the neonate, and infant formulae, and diet. The teaching strategies will include lectures, self-learning and assignment. The student will be evaluated through written exam, report and assignments evaluation. | | | | | | |
| **Topics Covered:** | | | | | | |
|  | | **Concepts and epidemiological approaches** of the various types of Inborn Error Metabolism (IEM). | | | | |
|  | | **Classification of IEM,** general pathophysiology and clinical manifestation of IEM. | | | | |
|  | | **Nutritional Treatment for IEM.** Clinical, biochemical, and dietary monitoring. | | | | |
|  | | **Inborn errors of carbohydrate metabolism.** The different types of glycogenesis (type I, III, IV, VI, and XI). Biochemical treatment, prevention of complications. | | | | |
|  | | **Midterm exam** | | | | |
|  | | **Inborn errors of Galactose metabolism.** The metabolic pathway to show the normal enzymatic action, their deficiency, and accumulation of metabolites. | | | | |
|  | | **Glycogen storage disorder** | | | | |
|  | | **Phenylketonuria, Maple syrup urine disease, Glutaricacidemia type 1** | | | | |
|  | | **Medium chain acyldehydrogenase deficiency** (glutaricacidemia type 2). **Alterations in Beta oxidation of fatty acids** (long chain, and very long chain fatty acids). | | | | |
|  | | **Organic acids metabolism** (organic acidurias). | | | | |
|  | | **Disorder of purine and pyrimidine metabolism.** | | | | |
|  | | **Final exam** | | | | |
| **Course Learning Outcomes:** | | | | | | |
| After completing this course, students would be able to: | | | | | | |
|  | Describe the pathophysiology and primary offending metabolites in common disorders of amino acid, organic acid, urea cycle, carbohydrate, and fatty acid metabolism. | | | | | |
|  | Define Phenylketonuria (PKU), galactosemia, maple syrup urine disease, glycogen storage diseases, and urea cycle defects. | | | | | |
|  | Identify the biochemical pathways of toxic accumulating metabolites, and their effect on the central nervous system (CNS) and growth retardation. | | | | | |
|  | Outline nutrition interventions commonly used with disorders of amino acid, organic acid, urea cycle, carbohydrate, and fatty acid metabolism. | | | | | |
|  | Discuss common management issues, and special diet formulae used in disorders of amino acid, organic acid, urea cycle, carbohydrate, and fatty acid metabolism as it relates to one’s health and nutritional status. | | | | | |
|  | Formulate practical dietetics consultation for clients with metabolic disorder. | | | | | |
|  | Design nutritional programs for clients with metabolic disorder. | | | | | |
|  | Apply special diet to avoid the metabolic disorder and give health & nutritional education and counseling to patients. | | | | | |
|  | Work with teamwork of metabolic disorders' patients. | | | | | |
| **Textbooks:** | | | | | | |
| 1 | Pons M. Ruiz, F. Sánchez-Valverde Visus, J. Dalmau Serra, (2007), Nutritional Treatment of Inborn Errors of Metabolism, Majadahonda Ergon, Madrid. | | | | | |
| 2 | L. Kathreen Mohan, (2012), Krause's Food and the Nutrition Care Process, 13th edition, Elsevier, USA. | | | | | |
| **Course Assessment:** | | | | | | |
| **No.** | | | **Assessment Tasks** | | **Mark** | |
|  | | | Quizzes | | 5 | |
|  | | | Assignments and reports | | 10 | |
|  | | | Midterm Exam | | 25 | |
|  | | | Final Exam | | 60 | |
| **Total** | | | | | **100** | |