

**Growth, Development, Nutrition & Ageing Module – Year 1 Semester II**  
**(2011/12 Batch)**

*Document revised on 10<sup>th</sup> September, 2013*

**Duration of the Module - 3 weeks**

Concept	Objectives	Time	Department	T / L Activity	Comments
	<b>At the end of the module, the students should be able to:</b>				
<b>2011-1/SBM-6/01</b>					
<b>Introduction to growth and Development</b>	1. Define growth and development 2. Emphasize the relevance of learning growth and development 3. Fascinating complexities of natural growth and development 4. Introduce the module and its objectives	1h	Paediatrics	Lecture	Create interest and importance for the module
	5. describe the factors affecting growth and development. i.e. genetic, hormonal, nutritional, immunological and metabolic factors	1h	Biochemistry	Lecture	
<b>2011-1/SBM-6/02</b>					
<b>Cell Growth</b>	1. recall the function of somatic cell division in cell replacement and growth	2h	Biochemistry	Lecture	
<b>a) DNA replication</b>	2. recall the basic events of DNA replication and DNA repair				
<b>b) Cell Cycle</b>	3. recall the phases of the cell cycle				
<b>c) Protein synthesis</b>	4. briefly state how the cell cycle is regulated and the consequences of deranged cell cycle 5. recall the basic events of protein synthesis (done in 2011 – 2/SBM-8/5)				
<b>2011-1/SBM-6/03</b>					
<b>Prenatal growth</b>	1. describe the factors affecting and regulating fetal growth 2. state the significance of healthy prenatal growth	1h	Obs.& Gynaecology	Lecture	To introduce common problems in growth and development of foetus using slide shows
	3. describe common mechanisms resulting in congenital abnormalities and intra uterine growth retardation				
<b>2011-1/SBM-6/04</b>					
<b>Prenatal Growth</b>					
<b>Clinical, Anthropological, and Laboratory (Imaging, biochemical and Haematological) assessment of Congenital abnormalities and IUGR</b>	1. importance of the biochemical identification of the fetal defects 2. Importance of early identification of fetal defects based on biochemical investigations	1h	Biochemistry	Lecture demonstration	

	3. describe the role of imaging in the assessment of prenatal growth	1h	Radiology	Lecture demonstration	
	4. explain the rationale for providing special nutritional requirements during pregnancy and lactation	1h	Biochemistry	Lecture	
<b>2011-1/SBM-6/05</b>					
<b>New born baby</b>	1. Physical characteristics of a new born baby _ wt, length, OFC 2. Deference from an adult – Proportions, physiology 3. Changes at the time of birth – CVS, RS, Gut 4. Normal Growth during neonatal period 5. Normal development during neonatal period 6. Needs of a new born baby for optimum growth and development	1h	Paediatrics	Lecture	Background for new born baby examination and neonatal life support
<b>2011-1/SBM-6/06</b>					
<b>New born Baby with deviations and anomalies</b>	1. Define – preterm, post term, LBW, VLBW, VVLBW, over weight 2. Deference of above categories from a normal baby 3. Abnormal growth – FTT, excess weight gain 4. Abnormal development - ? 5. Congenital anomalies	1h	Paediatrics	Lecture	Introduce birth defects. Back ground to learn clinical management of birth defects
<b>2011-1/SBM-6/07</b>					
<b>Postnatal growth and development</b>					
<b>i. skeletal growth ii. dentition iii. age estimation using teeth and bone</b>	1. describe the microscopic structure of bone 2. describe the macroscopic structure of a long bone a. Comments – Will be done along with the locomotion module, if it is done prior to this module	1h	Anatomy	Lecture (6h) + PD (2h x 3 groups sessions) - Total (12hrs.)	
	3. describe the process of membranous and endochondral ossification giving examples 4. describe what is meant by an epiphysial plate and synchondrosis explaining the microscopic structure and giving examples and relevance 5. estimate the age using ossific centres especially in radiographs 6. describe the post natal growth of a long bone	2h			
	7. describe the postnatal growth of skull and mandible.	1h			
	8. explain the term ‘fontanelle’ and state the age at which fontanelles disappear 9. explain the clinical importance of fontanelles 10. state the changes of bone due to ageing	1h			
	11. explain the terms ‘chronological age’ and ‘bone age’ giving it’s importance				

	12. list the different teeth in the deciduous and permanent dentitions 13. state the initial calcification times and eruption times of the deciduous and permanent dentitions 14. estimate age using teeth and jaws by direct observation and radiological methods	1h			
	15. describe the radiological assessment of skeletal development and estimation of age	1h	Radiology	Lecture	
<b>2011-1/SBM-6/08</b>					
<b>Normal growth and growth charts</b>	1. What is normal growth pattern – phases of growth 2. Methods of evaluation of growth 3. Growth charts and their uses 4. Needs for normal growth	1h	Paediatrics	Lecture Demonstration	Back ground to use CHDR and manage FTT, short stature, obesity ...
<b>2011-1/SBM-6/09</b>					
<b>Abnormal growth patterns</b>	1. Define – FTT, wasting, obesity, short stature, tall stature 2. Abnormal growth patterns in growth chart – Crossing centile, unstable growth pattern, 3. Evaluation of height and prediction of adult height - Parental size , pubertal stage, bone age 4. Introduce Gomus and waterlo classification	2h	Paediatrics	Lecture (2h)	Back ground to use CHDR and manage FTT, short stature, obesity ...
	5. identify laboratory and clinical features associated with malnutrition including kwashiorkor, marasmus, mineral and vitamin deficiencies	2h	Biochemistry	Lecture	
	6. identification of clinical problems based on biochemically test 7. identification of deficient nutrients in food defects	8h	Biochemistry	PD (4hx2)	
<b>2011-1/SBM-6/10</b>					
<b>Growth chart</b>	1. Introduce the practical assessment of growth and development 2. Draw a man tests 3. Correlation – anatomical diagnosis, etiological diagnosis 4. Introduce CHDR	4h + 1h	Paediatrics	CCR on a growth retarded child	Prepare the batch to CCR-I activity. Pre interns are expected participate for this lecture 10 groups to be given 10 simple scenarios given below. Evaluation of growth, development and nutrition would be done. Seven minutes Presentation from each group. Three best presentations would be rewarded. All module teachers and the dean are invited.

<b>2011-1/SBM-6/11</b>					
<b>Normal Development</b>	1. What is normal development and normal pattern 2. Brief introduction to development theories 3. Introduce domains of development - Gross motor, Fine motor and vision, hearing and speech, social emotional and behavioral 4. Intellectual and spiritual development 5. Needs for normal development	1h	Paediatrics	Lecture	
<b>2011-1/SBM-6/12</b>					
<b>Abnormal development pattern</b>	1. Introduce development delay 2. Deviations of development - bottom shufflers, commando crawlers 3. Concept limit age 4. Global development delay and specific development delay	1h	Paediatrics	Lecture	
<b>2011-1/SBM-6/13</b>					
<b>Normal Sexual Development</b>	1. Introduce normal maturation process and its normal range of deviation 2. Sex determination at birth 3. Sexual maturation physical and psychological changes 4. Tanner staging 5. Needs for normal sexual maturation	2h	Paediatrics	Lecture	
<b>2011-1/SBM-6/14</b>					
<b>Abnormal Sexual Development</b>	1. Introduce precocious puberty and delayed puberty 2. Introduce central & peripheral precocious puberty 3. Introduce isosexual and hetero sexual precocious puberty	1h	Paediatrics	Lecture	
<b>2011-1/SBM-6/15</b>					
<b>Ageing</b>	1. describe the structural and functional changes in the Ageing process	2h	Physiology	Lecture - 2h	
<b>a. Structural and functional changes</b>	2. state the factors affecting Ageing				
<b>b. Menopause</b>	3. explain the terms "menopause" 4. describe the hormonal and metabolic changes in menopause				
	5. describe the changes in the tissue composition in ageing (general & specific) 6. describe the general changes in the cell, apoptosis and nutritional problem in ageing.	2h	Biochemistry	Lecture - 2h	
<b>2011-1/SBM-6/16</b>					
<b>The process among females</b>	1. describe the factors affecting the process of ageing and the consequences of ageing on the individual family and community	2h	Medicine/ Biochemistry/ Com. Med.	Staff Seminar	
	2. describe the special nutrition requirements of elderly	1h	Biochemistry	Lecture	

	3. outline the Physical neurological, sexual and psychological changes that occur with aging in females	1h	Gyn. & Obs.	Lecture Demonstration	
<b>2011-1/SBM-6/17</b>					
<b>Why living beings have to eat</b>	1. state the characteristics of a balanced diet.	7h	Biochemistry	Lectures: 3 h SGD: 2 h Staff Seminar on dietary fibre: 2h	
<b>a. Balanced diet</b> <b>b. Nutrients and how they are used in the body – fate of nutrients</b>	2. describe the functions of different nutrients absorbed from the alimentary tract (with special reference to glucose, lipids, amino acids, vitamins and minerals). 3. state the fate of nutrients absorbed.				
<b>2011-1/SBM-6/18</b>					
<b>Do you eat enough</b>	1. explain why energy is required. 2. list the sources of energy. 3. explain what is BMR.	5h	Biochemistry	Lectures: 3h SGD: 2h	
<b>a. Energy requirement</b>	4. state the methods available to assess energy requirement. 5. explain how energy requirement could be calculated using BMR and type of physical activity.				
<b>b. Protein requirement</b>	1. explain why protein is essential in the diet. 2. list the indicators available to define quality of proteins: - BV, NPU, amino acid score). 3. compare the quality of proteins in commonly used foods in Sri Lanka. 4. explain zero, negative and positive nitrogen balance giving examples. 5. explain how protein requirement is derived from nitrogen balance studies. 6. state the recommended allowance of protein for adult male and female, pregnant and lactating women and pre school child.				
<b>2011-1/CLM-6/1</b>					
<b>Psychosocial factors in food selection</b>	1. describe the (bio) psychosocial factors that determine people's diets. 2. describe the learning process through which children develop food preferences. 3. explain how a person's mood can have an effect on a person's eating habits, (I.e. worry, to be concerned about an exam (anxiety), sadness, gloominess (depression), stress and effect on eating). 4. describe recent research findings regarding the potential addictive qualities of certain food types (e.g. sugar, additives) and also there relationship to hyper activity disorders in children. 5. describe the psychological manipulations of fast food advertisements.	2h	Psychiatry	Lecture plus small group discussion (the batch divided in to 4 groups with one supervisor each).	

<b>2011-1/SBM-6/19</b>					
<b>General</b>					
<b>a. Food, Food intake and factors affecting growth and development during life</b>	1. describe the variations in the basic nutritional requirements in the various phases of life (fetal, infancy, child hood, adolescents, adulthood, pregnancy, lactation, and elderly)	1h	Biochemistry	Lecture	
<b>b. Food intake during Pregnancy and lactation</b>	2. describe external factors – nutritional, infection, social, cultural, emotional and other factors affecting growth and development in pregnancy and lactation	1h	Gyn. & Obs.	Lecture	
<b>2011-1/SBM-6/20</b>					
<b>Relevance of learning nutrition</b>	1. Healthy nutrition promotes healthy growth, development and resistance to diseases ( communicable and non communicable) 2. Growth and nutrition 3. Development and nutrition – nutritional factors and feeding habits /practices for development, Breast feeding for development 4. Communicable diseases and nutrition 5. Non communicable diseases and nutrition - DM.HT, obesity, asthma, psychiatry 6. Clinical methods of evaluation of nutrition and malnutrition	2h	Paediatrics	Lecture	
	7. describes the methods used to minimize losses of nutrients during processing and increase the bio-availability of nutrients	2h	Biochemistry	Student Seminar	
<b>2011-1/SBM-6/21</b>					
<b>Nutrition</b>	1. describe the epidemiology of nutrition in Sri Lanka and world. 2. describe the role of health visitor in monitoring nutritional status of members in the community 3. describe the strategies available to improve the nutritional status of a community 4. describe how monitoring of the nutritional status of a community is carried out (children, pregnant lactating mothers and old age) 5. describe the special needs in physiological status in sports	4h	Com. Medicine	Lecture	
<b>2011-1/SBM-6/22</b>					
<b>Diet and nutrient intake</b>	1. describe the nutritional value of breast milk, cow milk, and milk products	2h	Biochemistry	Lecture	
	2. describe the special requirements of nutrition for the young and growing child.	1h	Biochemistry	Lecture	
	3. the importance of trace minerals in nutrition	1h	Biochemistry	Lecture	

<b>2011-1/SBM-6/23</b>					
<b>Principles of causation of Malnutrition</b>	<ol style="list-style-type: none"> <li>1. Causes of malnutrition – food availability, ingestion, digestion and assimilation</li> <li>2. Food availability – Global, national, domestic practices</li> <li>3. Ingestion – feeding practices – care givers and baby</li> <li>4. Method of assessing adequacy of food intake – history + 24 hour recall</li> <li>5. Digestion</li> <li>6. Assimilation</li> </ol>	2h	Paediatrics	Lecture	Provide back ground knowledge for the CCR I
<b>2011-1/SBM-6/24</b>					
<b>Round up session</b>	<ol style="list-style-type: none"> <li>1. Discuss the results of a MCQ paper done at home</li> <li>2. Summarize the module</li> <li>3. Feed back</li> </ol>	1h	Lecture	Paediatrics	