



CITY UNIVERSITY  
LONDON

School of Community and Health Sciences

RN/Diploma/BSc (Hons) Nursing  
2006 Curriculum

## Module Handbook

### **Advanced Biological Sciences Applied to Children's Nursing**

NM2732

NM3714

*February 2007 Cohort*

*Year 3 (February 2009 – February 2010)*

### Details of Module Leader

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## Advanced Biological Sciences Applied to Children's Nursing – NM2732/NM3714

Level:	Level 2, Diploma; Level 3, Degree
Year/Semester of Programme:	Year 3, February 2007 cohort
Dates running:	February 2009 – February 2010

### INTRODUCTION

Congratulations on successfully completing your previous year of study and welcome to the final ABS theme module, **Advanced Biological Sciences Applied to Children's Nursing**. In this module you will develop your knowledge and understanding of Biological Sciences in relation to child health at a more advanced level. You will be improving your skills of analysis and problem solving. A key feature of this module is the ***clinical application and integration*** of advanced biological principles to your nursing practice. We shall consider fundamentals of embryonic development, genetics and inherited disorders. We shall also study pathophysiology and therapeutic interventions relating to several major acute and chronic childhood conditions and apply these principles to the care of infants, children and young people in the health care setting.

It is important that you spend time reviewing your previous biological sciences work in order to build upon core concepts learnt during the first and second years. You will need to fully utilise the module lecture materials, references and self-directed study guides in order to progress effectively in this final year of study. You will be required to engage in self-directed learning as in previous modules.

We hope that you enjoy this module. Please ask the lecturers if you need further information or assistance. We look forward to helping you successfully reach your goals this year.

## **OVERVIEW OF THE THEME & LINKS WITH OTHER THEMES**

### **Theme Overview**

The nature of nursing and midwifery practice requires strong foundations in the applied biological sciences underpinned by research. Knowledge in the disciplines of biochemistry, embryology, microbiology, physics, physiology, pathology and pharmacology will enable you to gain an appropriate understanding of human processes in health and illness. These disciplines will be fundamental to your ability to make informed, rational assessments of the patients' health needs and draw constructive conclusions, which in turn will contribute to knowledgeable multidisciplinary delivery and competent management of an individual's care.

The aim of the module is to provide you with learning experiences in applied biological sciences theory, which will form a foundation for your initial nursing practice in the care of children and young people.

### **Links with other Themes**

This Theme has significant links with The Fundamental Aspects of Care Theme particularly in relation to the understanding of the provision of caring skills.

### **AIMS OF THE MODULE – LEVEL 2**

The aim of the module is to provide diploma students with advanced learning experiences in biological sciences that relate directly to the child and family, enabling the student to analyse and evaluate this theory in a variety of health care settings.

## **LEARNING OUTCOMES – LEVEL 2**

### **Knowledge and Understanding**

- Examine how biological sciences theory informs practice, enabling the student to evaluate care management and delivery for groups of children /young people safely and effectively. (NMC 2.6, 2.7, 2.15, 2.19, 3.15)

### **Values and Attitudes**

- Debate the value of biological sciences theory, and related evidence, which enables the student to show awareness of their roles, responsibilities and limitations in their abilities in providing safe, effective humanistic care for children, young people and their families. (NMC 1.11, 1.13, 1.15, 2.25, 3.10, 4.6)

### **Skills (cognitive/intellectual)**

- Examine how biological sciences theory promotes critical thinking in practice related to children's nursing. (NMC 1.5, 1.10, 2.6, 2.10, 2.21, 2.24, 3.15)
- Integrate effective problem solving skills in care management and delivery in the clinical setting. (NMC 1.5, 1.10, 2.6, 2.10, 2.21, 2.24, 3.15)
- Analyse how biological sciences theory promotes effective interprofessional collaboration and teamwork. (NMC 1.5, 1.10, 2.6, 2.10, 2.21, 2.24, 3.15)

### **Skills (subject specific/professional)**

- Structure and appraise nursing care that minimises or prevents complications/adverse events. (NMC 1.1, 1.2, 1.6, 2.12, 2.14, 3.9, 3.10, 3.11, 4.2, 4.7)

- Recognise and interpret actual/potential problems in the care delivery process formulating appropriate actions by the process of informed care planning (NMC 1.1, 1.2, 1.6, 2.12, 2.14, 3.9, 3.10, 3.11, 4.2, 4.7)

### **Skills (transferable)**

- Apply and integrate biological sciences theory in developing accountability and duty of care within the multidisciplinary team. (NMC 1.7, 2.2, 2.10, 2.14, 2.23, 2.24, 3.6, 3.8, 4.5)

### **AIMS OF THE MODULE – LEVEL 3**

The aim of the module is to provide degree students with advanced learning experiences in biological sciences that relate directly to the child and family, enabling the student to critically analyse and critically evaluate this theory arriving at appropriate inferences in a variety of health care settings.

### **LEARNING OUTCOMES – LEVEL 3**

#### **Knowledge and Understanding**

- Critically evaluate how biological sciences theory informs practice in enabling the student to challenge care management and delivery for children/young people. (NMC 2.6, 2.7, 2.15, 2.19, 3.15)

#### **Values and Attitudes**

- Justify the value of biological sciences theory, and related evidence, which enables the student to show awareness of their roles, responsibilities and limitations in their abilities to provide safe, effective humanistic care for children, young people and their families. (NMC 1.11, 1.13, 1.15, 2.25, 3.10, 4.6)

### **Skills (cognitive/intellectual)**

- Defend how biological sciences theory promotes critical thinking in practice related to children's nursing. (NMC 1.5, 1.10, 2.6, 2.10, 2.21, 2.24, 3.15)
- Apply creative and effective problem solving skills in the decision making process of care management and delivery. (NMC 1.5, 1.10, 2.6, 2.10, 2.21, 2.24, 3.15)
- Justify how biological sciences theory promotes effective interprofessional collaboration and teamwork. (NMC 1.5, 1.10, 2.6, 2.10, 2.21, 2.24, 3.15)

### **Skills (subject specific/professional)**

- Apply critical thinking skills in order to rationalise actual/potential health problems in children and young people. (NMC 1.1, 1.2, 1.6, 2.12, 2.14, 3.9, 3.10, 3.11, 4.2, 4.7)
- Appraise and critically evaluate how biological sciences theory informs nursing care, which minimises or prevents complications/adverse events. (NMC 1.1, 1.2, 1.6, 2.12, 2.14, 3.9, 3.10, 3.11, 4.2, 4.7)

### **Skills (transferable)**

- Apply and integrate biological sciences theory in exercising professional accountability within the multidisciplinary team. (NMC 1.7, 2.2, 2.10, 2.14, 2.23, 2.24, 3.6, 3.8, 4.5)
- Justify nursing roles and responsibilities in carrying out the care delivery/management of a group of children and young people. (NMC 1.7, 2.2, 2.10, 2.14, 2.23, 2.24, 3.6, 3.8, 4.5)

## OVERVIEW OF MODULE CONTENT AND SESSIONS

The content of the module is based around the proposed standards offered in the National Service Framework for Children and Young People (2004)<sup>1</sup>.

### STANDARD 6

Meningitis in children

Childhood Shock

Childhood Diabetes Mellitus

### STANDARD 7

Renal disorders in children and pharmacotherapeutics

Childhood burns and scalds

Childhood cancer and pharmacotherapeutics

Congenital heart conditions in children and pharmacotherapeutics

Acute respiratory failure and pharmacotherapeutics

Acid base balance and disturbances in children

### STANDARD 8

Cerebral palsy and pharmacotherapeutics

Inherited blood disorders and pharmacotherapeutics

Cystic fibrosis and pharmacotherapeutics

Epilepsy and pharmacotherapeutics

Genetics and chromosomal abnormalities

HIV/AIDS in children

### STANDARD 9

Developmental biology 1: The Beginning of Life

Developmental biology 2: Progression to Birth

Preterm neonate

Neonatal sepsis and pharmacotherapeutics

Congenital anomalies and therapeutic strategies

Principles of mechanical ventilation

Evidence based practice: The pharmacological perspective

## IV STUDY DAY

Intravenous fluids and electrolyte therapy

Pharmacological principles in IV therapy

Department of Health (2004) *National Service Framework for Children, Young People and Maternity Services*. London: Department of Health.

## USING YOUR STUDENT DIRECTED STUDY TIME

As indicated in the introduction, you will be expected to carry out the suggested self-directed learning provided in the work book. These will relate to specific or individual teaching sessions. Your self-directed study will be evident by your contribution to the interactive processes in each teaching session and your quest for further reading.

## LEARNING AND TEACHING METHODS

The methods listed below will be used to teach this module. For full descriptions of these learning and teaching methods, please refer to your programme handbook:

### **Lectures**

For the presentation of new material and to stimulate thinking and enquiry, most classes will be conducted as lectures.

### **Small group work/laboratory practicals**

To enable the consolidation of material taught in the lectures, facilitate the acquisition of manual and team skills and provide opportunities for students to use conceptual knowledge and cognitive processes to solve problems, small group work and laboratory practicals will be undertaken.

### **Student directed learning (workbooks)/E-Learning**

To facilitate independent learning and thinking and contribute to life long learning. Student directed learning and e-learning will be incorporated.

## **Tutorials**

To facilitate additional subject support and direction, tutorials will be with either your designated personal tutor or with a biology lecturer.

## **Clinical Practice**

To enable the application of theory to practice and the development of knowledge skills, you will be expected to apply relevant biological principles to the practice setting.

## **MODULE ASSESSMENT**

The assessment is a two-part examination relating to medicine administration. For further details on submitting assessments, pass requirements and other information please refer to the separate assessment pack.

## **READING LIST & USEFUL WEBSITES**

Ball, J.W. and Bindler, R.C. (2004) *Pediatric Nursing*. 3<sup>rd</sup> ed. New Jersey: Prentice Hall.

British National Formulary (2008) *British National Formulary for Children*. London: Pharmaceutical Press.

Candy, D., Davies, G. and Ross, E. (2001) *Clinical Paediatrics and Child Health*. Edinburgh: Saunders.

Chamley, C.A., Carson, P., Randall, D. and Sandwell, M. (2005) *Developmental Anatomy and Physiology of Children: a Practical Approach*. Edinburgh: Elsevier.

Choonara, I., Nunn, A.J. and Kearns, G. (2003) *Introduction to Paediatric and Perinatal Drug Therapy*. Nottingham: Nottingham University Press.

Fuhrman, B.P. and Zimmerman, J.J. (2006) *Paediatric Critical Care*. 3<sup>rd</sup> ed. St Louis: Mosby.

Glasper, E. and Richardson, J. (2009) *A Textbook of Children's Nursing*. 2<sup>nd</sup> ed. [ In Press ] Edinburgh: Elsevier.

Hockenberry, M. (2008) *Wong's Nursing Care of Infants and Children*. 8<sup>th</sup> ed. St Louis: Mosby.

Lissauer, T. and Clayden, G. (2007) *Illustrated Textbook of Paediatrics*. 3<sup>rd</sup> ed. Edinburgh: Mosby.

Marieb, E.N. and Hoehn K (2009) *Human Anatomy and Physiology*. 8<sup>th</sup> ed. London: Pearson Benjamin Cummings.

Martini, F.H. (2009) *Fundamentals of Anatomy and Physiology*. 8<sup>th</sup> ed. London: Pearson Benjamin Cummings.

McCance K L and Huether S E (2007) *Understanding Pathophysiology* 5<sup>th</sup> ed. St Louis: Mosby

Neil, S. and Knowles, H. (2004) *The Biology of Child Health*. Basingstoke: Palgrave Macmillan.

Nussey, S.S. and Whitehead, S.A. (2001) *Endocrinology: an Integrated Approach*. Oxford: Bioscientific Publishers.

Porth M and Matfin G (2008) *Pathophysiology Concepts of Altered States* 8<sup>th</sup> ed. Philadelphia: Lippincott Williams and Wilkins

Seeley, R.R., Stephens, T.D. and Tate, P. (2005) *Essentials of Anatomy and Physiology*. 7<sup>th</sup> ed. Boston: McGraw Hill.

Skirton, H. and Patch, C. (2002) *Genetics for Healthcare Professionals: a Lifestage Approach*. Oxford: Bios Publishing.

Schechter, N.L., Berde, C.B. and Yaster, M. (2003) *Pain in Infants, Children and Adolescents*. 2<sup>nd</sup> ed. Philadelphia: Lippincott Williams and Wilkins.

Tотора, G.J., Funke, B.R. and Case, C.L. (2009) *Microbiology: An Introduction*. 10<sup>th</sup> ed. San Francisco: Pearson Education.

Thompson, J.M. (1998) *Nutritional Requirements of Infants and Young People*. Oxford: Blackwell Science.

### **Key Websites:**

[www.doh.gov.uk](http://www.doh.gov.uk)

Department of Health NSF (Medicines Management)

<http://www.rcpch.ac.uk>

Royal College of Paediatrics and Child Health

[www.childgrowthfoundation.org](http://www.childgrowthfoundation.org)

This website contains information which will be of benefit to parents with a child who has a diagnosed or suspected growth problem, to people who have a growth problem and their families, and to people and medical professionals with an interest.

[www.ppprofile.org.uk](http://www.ppprofile.org.uk)

<http://www.doh.gov.uk/NSF/children.htm>

<http://www.resus.org.uk/pages/guide.htm>

Resuscitation UK Council Guidelines 2005

<http://www.WHO.org>

The World Health Organisation website

<http://mywebpages.comcast.net/wnor/respiratorymovements.htm>

The study of the thorax, with explanations and demonstration of respiratory processes

[http://www.nao.org.uk/publications/nao\\_reports/9900230.Pdf](http://www.nao.org.uk/publications/nao_reports/9900230.Pdf)

National Audit Office Report on Hospital Acquired Infections

[http://europa.eu.int/comm/health/ph\\_determinants/environment/PP/pp\\_en.htm](http://europa.eu.int/comm/health/ph_determinants/environment/PP/pp_en.htm)

Europe Public Health website

[www.testandcalc.com](http://www.testandcalc.com) (numeracy practice)