

BIOLOGY 252 - PATHOPHYSIOLOGY FOR NURSING 1 FALL 2002

INTRODUCTION

Biology 252 (Pathophysiology) is the first half of a two-semester course for students in the second year of the Collaborative Curriculum for the Bachelor of Science in Nursing Program. The course focuses on the basic concepts of pathology that are used to define dysfunction of the major organ systems.

The course is taught jointly by a faculty member from Biology and one faculty from Nursing. The intent is to enable students to apply and integrate the theory of pathology to the client cases encountered during clinical practice. Physical assessment skills, use of diagnostic test results, pharmacology and treatment regimes used by the health team will be included with each unit. It is important to note that this is an integrated course comprising both pathology and nursing components. For this course, you will obtain information from several sources including lectures, class discussions, textbooks, client profiles and clinical practice. Do not rely exclusively on any one, or only some, of these sources. The outline that follows lists the various topics that will be covered in the course. You are encouraged to review these topics in the text before classes and to consolidate information obtained in lectures with that in the text. Some of the topics involve self-study (indicated in the outline) and will not be covered in lectures. They too are examinable.

It is essential that students have a good understanding of normal physiology and some of the associated anatomy of the organ systems being covered as this forms the basis for studying pathophysiology. There will be no time to review or re-teach this in class.

REQUIRED TEXTS (these texts are required for other Nursing courses as well and you may already have some of them)

Black, J.M., Hawks, J.H. & Keene, A.M. (2001). *Medical-Surgical Nursing: Clinical Management for Positive Outcomes* (6th ed.). W.B. Saunders Company, Toronto.

Eisenhauer, L., Nicols, L., Spencer, R., Bergan F., (1998). *Clinical Pharmacology and Nursing Management* (5th ed.). Lippincott, New York.

Estes, M. (1998). *Health Assessment and Physical Examination*. Delmar, New York.

Pagana, K. & Pagana, J. (1997). *Diagnostic and Laboratory Test Reference* (3rd ed.). Mosby, New York.

Pillitteri, A. (2003). *Maternal & Child Health Nursing. Care of the Childbearing and Child rearing Family*. 4th ed Lippincott, Philadelphia.

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EVALUATION

Client Profiles	20%
Mid-term exam (Monday, 21 October)	35%
Comprehensive final exam (college exam period)	45%

Tests and exams will integrate both the pathology and nursing components of the course. However, the OVERALL weighting will reflect the disparity in number of lectures for each component (pathology $\frac{2}{3}$, nursing $\frac{1}{3}$). Examinations must be written on the specified date and time, unless there is a medical emergency that prevents you from doing so. You must notify one of the Instructors **before** the examination and submit a doctor's note that indicates the doctor's evaluation that you were unable to write.

LETTER GRADES

The correlation between overall percent score in the course and the letter grade that will be awarded follows the College standard:

A+	95% or higher	B-	70% or higher
A	90% or higher	C+	65% or higher
A-	85% or higher	C	60% or higher
B+	80% or higher	D	50% or higher
B	75% or higher	F	less than 50%

Although the pass mark for this course is 60%, in order to continue the nursing program, you must "achieve a cumulative GPA of at least 3.5 on a 9.0 scale". This translates to an overall grade of C+ and must be considered an absolute minimum.

CLIENT PROFILES

As a learning and evaluation tool, client profiles will be used to link the Pathology and Nursing theory. There will be three profiles during the term, each marked out of 100, and contributing 20% to the total Biology 252 mark.

Due dates:

September 30
October 28
November 25

Every attempt will be made to return the marked profiles on the second Monday following these dates. Late papers will lose 5% per day unless an extension has been discussed and granted. See attachment for details on client profiles.

COURSE OUTLINE

Unit 1: Concepts of Pathology

Terminology
Fluid-electrolyte and acid-base imbalance
Cellular injury
Inflammation
Healing (**self-study**)
 Proliferation / resolution (Black, page 319)
 Maturation / reconstruction (Black, page 320)
Infection / Fever
Abnormal immune responses
Neoplasia
Congenital and genetic disorders

Unit 2: Endocrine Disorders

Pancreas

Diabetes mellitus
 Acute complications
 Chronic complications

Thyroid gland

Hyperthyroidism
Hypothyroidism

Parathyroid gland (self study)

Hyperparathyroidism (Black, page 1109)
Hypoparathyroidism (Black, page 1114)

Adrenal gland

Adrenocortical insufficiency
Adrenocortical hyperfunction

Pituitary gland

Hyperpituitarism
Hypopituitarism

Unit 3: Neurological System

Cellular Injury

Alzheimers
Multiple sclerosis
Parkinsons disease (**self study**, Black, page 2017)
Amyotrophic lateral sclerosis (ALS)
Myesthenia gravis (**self study**, Black, page 2020)
Huntington's chorea

Neoplasia

Tumors - Brain
 Supporting structures
 Metastatic

Infection

Brain abscess
Encephalitis, meningitis (bacterial, viral, parasitic, fungal)

Unit 3: Neurological System (cont'd)**Disorders of Structure and Function**

Migraine (**self study**, Black, page 1948)
Seizure
Epilepsy
Intracranial hemorrhage - subdural, epidural, intracerebral
Increased intracranial pressure
Spinal injury
Shock
CVA (brain attack / stroke)
 Ischemic
 Hemorrhagic
Transient ischemic attacks
Traumatic brain injury

Immune Response

Guillain Barre syndrome

Congenital Malformations (self study)

Myelomeningocele (Pillitteri, page 1158)
Hydrocephalus (Pillitteri, page 1150)

Genetic (self study, Pillitteri, page 171)

Down Syndrome

Unit 4: Cardiovascular System**Cellular Injury**

Angina
Chronic arterial occlusion
Peripheral vascular disease
Hypertension
Myocardial infarction

Neoplasia

Leukemia
Lymphoma (**self study**, Black, page 2173)

Infection

Rheumatic fever
Endocarditis / pericarditis

Disorders of Structure and Function

Heart failure
Acute arterial occlusion
Cardiomyopathy
Arrhythmias
Aneurysms
Valvular disease
Acute venous disorders
Anemia
Lymphatic disorders (**self study**, Black, page 1429)
Cardiac tamponade
Hemorrhagic disorders (**self study**)
 Disseminated intravascular coagulation, Black, page 2123)

Unit 4: Cardiovascular System (cont'd)

Congenital Disorders

Congenital heart disease
Hemophilia

Genetic Disorders

Sickle cell anemia
Trisomy 13, Trisomy 18 (**self study**, Pillitteri, page 170)

We welcome you to the course and look forward to an enjoyable and challenging semester.

CLIENT PROFILES

Of the three Client Profiles, the first two will be done individually, and the third in groups of 3-4, within a clinical group. Select a patient with whom members of the group are familiar and can all research. The purpose of this is to encourage clinical team work, and wider ranging exploration of clinical care.

Each profile is to be typewritten/computer generated, about 3 – 5 pages, 11 font minimum, 1.5 spacing, 2” right margin (to allow for legible comments). Excessive length will be penalized unless you have a very complex client and have discussed it with me. Spelling and grammar will not be marked, but do influence how I view your paper. Where appropriate you can use point form, columns and/or tables. In general Client Profiles do not need to be referenced, but if you quote a source, such as a text, directly you must cite that source. (Place the passage in quotation marks, and cite author and page number.)

Format

At top: patient initials or a pseudonym, gender, age, allergies, admission diagnosis, admission date, your information collection date, and any surgical or procedure date. The idea here is to give me reference points so I know how many days post-op, post-admission or post-event the bloodwork, tests and your assessment are. Please be sure to remove any information which might jeopardize client confidentiality.

Next: Patient's admitting complaints, which may be the same as or different than the diagnosis. For example, the diagnosis may be lung cancer, but what brought the patient in was uncontrolled pain and constipation. Also a brief description of past medical history.

Then: In whatever order seems most appropriate to you, and fits with the particular patient, explore the patient's diagnostics, medications, a physical assessment, their nursing care and pathophysiology links in some depth.

- I want to see that you understand the relationship between tests and diagnostics, your own assessment and the patient's treatments and medications. What is all this telling you about the patient's condition. For example, what does an elevated bilirubin and a palpable, tender liver tell you about your patient with Hepatitis? What concerns might you have about treating that patient's fever with Tylenol?
- In the “patho links” section I want to see that you understand the primary diagnosis, surgeries, and any additional conditions which increase the complexity of the patient's condition. For example, what is the relationship between your patient's diabetes and her renal failure? How do they interact? How is treatment compromised? How are medications affected? Do you understand the implications for any surgical procedure?
- In the medication section include medication name, classification and mode of action. Mode of action is how it does whatever it does. If not known, according to the references, it is ok to say mode of action unknown. In addition I want to see that you know why this medication is being given to this patient. If you don't think a particular med is benefiting your patient, you could discuss this here, or in an “advocacy” section.

- Patient Advocacy: This piece is so that you can discuss what is missing and/or what you disagree with about your patient's care. You may do this as a separate section, or in questions and comments you pose (clearly) throughout the paper. Include what you will do, or would like to do about it. If you are content with the completeness of the patient's care, say so. This is a section where it is ok to go out on a limb a bit and speculate, or to ask questions which you haven't been able to find an answer to. I expect evidence, however, that you have looked!

Marking:

- Marked out of 100.
- An 'A' paper will go into depth in all areas, but particularly into patho links and pharmacology.
- Degree of difficulty counts – that is, a Client Profile which is very well done, but on a patient with only one condition and few meds will likely get 80%, while papers in the 81-100% range will demonstrate a thorough understanding of patients of greater complexity.

Suggestions:

- You can use charts or tables to organize information if it works for you. (An example will be distributed in class.)
- You do not need to explore every condition of the patient – some may have 5 or 6. Pick the most significant two or three. Mention the others as they affect your patient.
- You do need to discuss all the medications. If there are lots (>10) you may note that you are not going into detail on some that are unused PRN medications, or which are quite common and do not impact the patient's condition severely. Use judgement here – eg If your patient has hepatitis, you should discuss Tylenol, even though it is a commonly used medication.
- With PRN meds, include an indication of how often they are being used. (eg “Tylenol ordered q4h PRN; being used once or twice a day”)
- Resources: remember that you can discuss your patient with their surgeon, the pharmacist, and so on. Use the resources available to you to fully understand your patient. If you have information from a person which you were unable to collaborate in a written source, let me know where it came from. (ie “in talking with the surgeon I discovered that ...”)
- Different wards use different acronyms. If you use initials or a “local” terminology, please define the term, or write it in full. For example the first time it came up you would write “Respiratory Syncytial Virus (RSV)”. Thereafter you would just write “RSV”.
- If a surgery or unusual test is mentioned, make sure it is described or explained. I want to know that you know what it is and why it was done.

These are challenging and time consuming assignments, but they are also a wonderful learning tool where you can really delve into the pathophysiology and pharmacology which you are seeing and working with each day. I hope you get as much from writing them as I know I will from marking them.