

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: RENAL

CODE NO: NUR 408

PROGRAM RN CRITICAL CARE NURSING PROGRAM

SEMESTER;

DATE: APRIL 1988

AUTHOR: WENDY MALESH

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RENAL

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COURSE DESCRIPTION:

The renal course covers renal anatomy and physiology including topics such as the kidney's role in blood pressure regulation and acid-base balance-

Renal pathophysiology is directed at outlining the classifications of renal failure, the effects of renal dysfunction on other body systems and the treatments available (dialysis, diet, transplant) to minimize or eliminate the effects of uremia on the body\*

The use of the nursing process is incorporated throughout the course. Nursing interventions in the use of dialysis techniques will be presented. Emphasized also is the psychosocial impact of renal disease and kidney transplant.

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## COURSE OBJECTIVES

## COURSE CONTENT

Review anatomy of the kidney-	A. Anatomy: structure Kidney Nephron unit
Outline the unique aspects of renal circulation	B. Renal circulation Arterial Venous Vasa Recta Glomerulus Juxtaglomerular Apparatus
Discuss alterations in renal circulation that would influence the glomerular filtration rate.	C. Glomerular Filtration Pressures Rate Influences Measurement
Identify appropriate areas in the nephron for resorption, secretion and excretion of fluids, electrolytes and wastes.	D. Tubular Resorption secretion and Excretion: - Proximal Convoluted Tubule - Loop of Henle - Distal Convoluted Tubule - Collecting Duct
Discuss the Countercurrent mechanism	E. Countercurrent Mechanism: - Loop of Henle - Renal Interstitium - Vasa Recta
6, Describe methods of renal regulation of the acid-base balance.	F. Renal Regulation of Acid Base - Acid, Base, Buffers - Acidosis, Alkalosis - Kidney as a physiologic buffer
7. Discuss the relationship between the renin-angiotensin system and aldosterone.	G. Renin-Angiotensin-Aldosterone System: - Juxtaglomerular apparatus - Regulation of Blood Pressure

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|-----|---|----|---|
| 8.  | Explain the importance of the erythropoietin system                               | H. | Erythropoietin System:<br>- Kidney secretion<br>- Effect on Hematologic System  |
|     | List questions to be asked to elicit information on patient history               | A. | Nursing Process<br>* Assessment<br>- chief complaint<br>- History of present illness  |
| 10  | Discuss previous history in terms of other body system problems as well as renal. | B. | Nursing Process<br>*Assessment<br>- Past History<br>1) Renal<br>2) Cardiovascular<br>3) Endocrine, Metabolic<br>4) Pulmonary<br>5) Infection<br>6) Other  |
| 11. | Assess and report vital signs.  | C. | Vital Signs   |
| 12, | Employ a systematic approach to nursing assessment.                               | D. | Inspection:<br>Level of Consciousness<br>Integument<br>Eyes, Ears<br>Edema<br>Respiratory<br>Urinary<br>Neuro-muscular<br>2<br>Palpation<br>Kidney size and shape<br>Percussion<br>Tenderness<br><br>Auscultation: bruits |

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## COURSE CONTENT

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|---|---|
| 13, Outline diagnostic studies utilized to provide information about renal function.  | Diagnostic Studies<br>- Blood<br>- Urine<br>- Culture<br>- Ph, Glucose<br>- Protein<br>- IVP<br>- Renal Scan<br>- Cystoscopy<br>- CT Scan<br>- Renal Biopsy |
| 14 Assess all body systems in relation to the effects of uremia.                      | Nursing Process,<br>Assessment: Effects of Uremia on other body systems   |
| 15. Differentiate each phase of renal failure according to pathological changes*      | A. Acute renal failure:<br>- prerenal<br>- renal<br>- postrenal<br>2<br>Chronic renal failure   |
| 16. Discuss etiology and clinical presentation of renal failure.                      | B.^ Etiology<br>Clinical presentation   |
| 17. Outline diagnostic studies used to determine the presence of acute renal failure. | C. Diagnostic Studies   |
| 18. Describe major complications that could occur in renal failure.                   | D. Complications - Uremic effects   |
| 19. Identify the effects of renal dysfunction on other body systems.                  | Effects of renal dysfunction on other body systems:<br>1) Cardiovascular<br>2) Neurologic<br>3) Metabolic<br>4) Hematologic                                 |

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| 20  | Relate the principles of transport mechanisms to the principles of dialysis.  | Transport Principles<br>Peritoneal dialysis<br>Hemodialysis  |
| 21  | Distinguish between peritoneal and hemodialysis in terms of indications, contraindications, method and nursing implications and responsibilities. | Dialysis methods<br>1. Peritoneal <ul style="list-style-type: none"> <li>- indications</li> <li>- contraindications</li> <li>- types <ul style="list-style-type: none"> <li>* intermittent</li> <li>* continuous ambulatory</li> </ul> </li> <li>- complications</li> <li>- nursing responsibilities</li> </ul> 2. Hemodialysis <ul style="list-style-type: none"> <li>- indications</li> <li>- contraindications</li> <li>- hemofiltration, ultrafiltration</li> <li>" complications</li> <li>- nursing responsibilities</li> <li>- Heparinization</li> </ul> |
| 22  | Discuss the importance of patient and family teaching in the care of the AV Shunt or Fistula.   | B. AV Shunt<br>AV Fistula  |
| 23. | Observe for conditions that foster infection.   | Prevention of Infection<br>- Hepatitis   |
| 24. | Discuss the significance of the Australian Antigen test   | Australian Antigen Test<br>HBs Ag.   |
| 25, | Relate Renal dysfunction to normal drug metabolism-   | Drug metabolism - care with drug administration  |
| 26. | Discuss the psychosocial impact of renal disease.   | D. Psychosocial impact of renal disease:<br>- adaptation response<br>- support systems   |

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|---|--|
| 27. Discuss the grief and bereavement process,  | Grief and Bereavement:<br>Response to Loss                             |
| 28. Develop a nursing care plan for the patient before, during and after kidney transplant. | Kidney transplant<br>Nursing Process                                   |
| 29. Discuss the psychological and social effects in relation to kidney transplants.         | B. Psychological and Social<br>Effects of Kidney<br>Transplants        |
| 30. Outline the categories of organ rejection.  | C. Rejection:<br>- Hyperacute<br>- Accelerated<br>- Acute<br>- Chronic |
| 31. Identify the immunosuppressive agents used to prevent organ rejection.                  | D. Immunosuppressives  |

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### ASSIGNMENTS

Assignment #1 (worth 10% of final mark) **Chronic Renal Failure**

### TESTS

Test #1 (worth 20% of final mark) **Kidney function, structure.  
Tubular resorption,  
secretion, excretion.**

Test #2 (worth 70% of final mark) **Physiology, pathophysiology  
Dialysis  
Nursing Interventions  
Renal Transplant  
(all course content with  
exception of material  
covered in Test #1)**

### GRADING SCALE

\* A minimum achievement level of 70% is required (B)

A+	90-100%
A	80-89%
* B	70-79%
C	60-69%
R	Repeat - objectives not met

NOTE: Tests are the property of Sault College,

HOURS: 4 weeks (12 hours)  
4 weeks @ 3 hours per week

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**TEXTBOOKS**

Alspach, J., Williams, S., Care Curriculum for Critical Care Nursing, 3rd Ed., W.B. Saunders Co., Toronto. 1985

Harvey, M.A., Study Guide to Care Curriculum for Critical Care Nursing, W.B. Saunders Co., Toronto. 1986

**METHODOLOGY**

Lecture

Audio visual: overhead projector  
filmstrip/cassette  
VHS VCR

Tests (2)

Assignments (1) Graded

Reading assignments

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**SAULT COLLEGE**

**CRITICAL CARE NURSING**

**RENAL NUR 408**

CLASS SCHEDULE

READING/HOMEWORK  
ASSIGNMENTS

Week 1	Lesson 1	
	Objectives and course introduction	Text pg 348-358 359-366 385-398
	Functions of the Kidney	Study for A+P quiz week 2
	Anatomy & Physiology: Kidney Nephron Glomerular Filtration Renal function in: Acid-base balance BP regulation Erythropoietin secretion	
	Nursing Process: Renal Assessment	
Week 2	Lesson 2	
	A+P test #1	
	Renal Assessment: Continued	
	Diagnostic studies	
	Acute Renal failure	
	Classifications Treatment, Drugs Nursing implications	
Week 3	Lesson 3	
	Review Test #1	Text: pg. 415-420
	Dialysis	Study for final test
	Peritoneal Hemodialysis	
	Flimstrip: Principles of Hemodialysis - 30 min. (FS 160 - Sault College Library)	
	Nursing Process related to Dialysis	

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CLASS SCHEDULE

READING/HOMEWORK  
ASSIGNMENTS

Week 4    Lesson 4  
          Prevention of Infection:  
                  Hepatitis  
                  Australian Antigen  
  
          Psychological Impact of Renal  
                  Disease  
          Grieving Process - Loss  
  
          Renal Transplant  
          Organ donation:  
                  Video - 25 min.  
  
          Final Test