



**Tehran University of Medical Sciences**

**School of Nursing and Midwifery**

## ***Critical Care Nursing***

**(General specifications, plans and headlines)**

**Final revision and editing**

**2016**

**Section I**

**Title:** Critical Care Nursing

**Degree:** MSc

### **Introduction**

Critical care nursing is the field of nursing with a focus on the utmost care of the critically ill or unstable patients. These specialists generally take care of critically ill patients who require mechanical ventilation by way of endotracheal intubation and vasoactive intravenous medications. Critical Care Nurses are also known as ICU nurses. They treat patients who are chronically ill or at risk for deadly illnesses. ICU nurse apply their specialized knowledge base to care for and maintain the life support of critically ill patients who are often on the verge of death. On a day-to-day basis a critical care nurse will commonly, "perform assessments of critical conditions, give intensive therapy and intervention, advocate for their patients, and operate/maintain life support systems which include mechanical ventilation via endotracheal, tracheal, or naso-tracheal intubation, and titration of continuous vasoactive intravenous medications in order to maintain a " mean arterial pressure that ensures adequate organ and tissue perfusion.

**Definition;** Critical Care Nursing is one of the most distinguish branches of nursing profession which by improving nursing care, management, education, ethic and professional behavior tries to reduce mortality and illness complications in critical care settings.

### **The aim of the course**

**Mission:** mission of the program is to minimize mortality, illness complications and to improve nursing practice in critical care settings as well as training competent, skillful and responsible nurses.

**Vision:** The MSC Critical Care Nursing' vision for the next ten years are;

- To improve care delivery standards and nursing practice in critical care settings.
- To minimize mortality by promoting world's standards.
- To increase the use of managerial, educational and research measurers in critical care nursing.
- To draw attention of health system managers and policy makers to critical care units in hospitals.

**Aims:** the aim of program is to train proficient, knowledgeable, competent, ethically aware and responsible professionals who would have sufficient knowledge and abilities to work confidently in their main area of expertise (care of critically ill patients) and also to give them extra abilities such as;

1. To improve nursing knowledge and skills

2. To give better vision and ability to deliver high standard nursing care to patients in critical care units.
3. To improve; inter-personal, group and electronic communications skills, lifelong learning, research, management, problem solving skills ext.
4. To improve knowledge and skills in professional manner and behavior
5. To improve IT skills and data retrieve
6. To improve necessary knowledge and skills in relation to management, organization, planning and training of critical care nurses.
7. To improve nursing knowledge and skills by participating in training courses and study as well as continuous self-evaluation.
8. To improve the abilities of critical thinking and problem solving.

### **General competencies**

Communication skills, interviewing, reporting, critical thinking, professionalism as well as:

- Concepts and theories in nursing
- Evidence-based practice
- Research methodology in nursing
- Statistics for nursing research

### **Specific Competencies and Skills (Special Qualifications)**

- To deliver skilled and evidenced-based nursing care and intervention for patients who need intensive care.
- To assess patients non-invasively and help invasive assessment of patients in critical care units.
- To interpret and analyze clinical data
- Acquiring-qualifications for conducting applied researches and employing the findings to solve nursing problems in the care of patients.

### **The Terms and Conditions of Admission to the Course**

- Holding a BSc degree in nursing received in Iran or abroad
- Participating in the national Master's entrance exam and becoming qualified
- Being mentally and physically healthy

### **Educational Strategies, Methods and Techniques**

**Educational Strategies:** Task-based learning blended learning (teacher-centered and student-centered), blended learning (attendance and DLN), problem-based learning, professional competency-based learning, and evidence-based learning.

**Methods and Techniques:** lecture (question & answer, video clip), journal club, case presentation, discussions in small groups, seminars and conferences, site visits (for example,

Nursing Office of the Tehran university of medical sciences, and Iranian nursing organization), and clinical and managerial practice in health care fields).

### **Student Assessment**

Written assessment [multiple choice questions (MCQ), essay (restricted & extended answer)], oral assessment (unstructured and structured oral exams), interactive computer test, and practical assessment (projects, Portfolio, and Logbook, lab observations).

### **Numbers and Types of Credits and Tables of the Courses**

Prerequisite courses: 4 credits

Core Courses: 28 credits

Dissertation: 4 credits

Total Number of Credits: 32

**Table 1 Prerequisite Courses**

Course code	Course title		Credits				Total hours					Requirement
		theoretical	practical	practicum	internship	total	theoretical	practical	practicum	internship	total	
01	Advanced statistics and research methodology	2	1	-	-	3	34	34	-	-	68	-
02	Information technology in healthcare system	0.5	0.5	-	-	1	8	17	-	-	25	-
Total credits= 4		2.5	1.5	-	-	4	42	51	-	-	93	-

Cod of course	Course title	Credits	Hours				Requirement
			Theory	Practical	Placement	Total	
04	Introduction to critical care nursing	1	17	-	-	17	-
05	Nursing practice in critical care units	3	51	-	-	51	
06	Advance nursing observation	3	51	-	-	51	
07	Pharmacology	1	17	-	-	17	
08	General topics in organ transplant nursing	1	17	-	-	17	
Total			9				

Cod of course	Course title	Credits	Hours				Requirement
			Theory	Practical	Placement	Total	
09	Critical care nursing 1  (Respiratory system)	3	26	-	77	103	04-05-06-07-08
10	Critical care nursing 2  (cardiovascular-cardiothoracic surgery)	3	26	-	77	103	04-05-06-07-08
11	Critical care nursing 3  (neuro system-neurosurgery, psychiatric disorder)	2	17	-	51	68	04-05-06-07-08
12	Critical care nursing 4  (Renal system-urinary tract surgery)	2	17	-	51	68	04-05-06-07-08
13	Critical care nursing 5  (Endocrine glands-Obstetrics and Gynecology diseases)	1	9	-	26	35	04-05-06-07-08
14	Critical care nursing 6  6 (digestive system-abdominal and	2	17	-	51	68	04-05-06-07-08

	pelvic surgery)						
15	Critical care nursing 7  (oncology and blood, immune system and infectious diseases)	2	17	-	51	68	04-05-06-07-08
16	Critical care nursing 8  (basic principles of nursing care in traumatic injuries)	3	26	-	77	103	04-05-06-07-08
17	Critical care nursing 9  nursing (vascular and orthopedic surgery)	1	9	-	17	26	04-05-06-07-08
18	Dissertation*	4	-	-	-	4	
Total		23					

#### \*MSc Dissertation Proposal

The thesis proposal describes the rationale for the proposed research, and outlines its basic components. The proposal is submitted to the department's research committee members (consisting of a dissertation advisor, department's head, and the department education and research representatives) for the final evaluation and approval.

#### Dissertation Defense

The student and the thesis committee are required to comply with the guidelines of School of Nursing and Midwifery with regard to the presentation of the thesis and meeting the deadlines for graduation. During the viva, the jury committee will thoroughly examine the student's knowledge in the related area of the research

## **Ethical issues**

The graduates should,

- Observe the Patient's Bill of Rights<sup>1</sup> when working with the patients.
- Strictly observe Biosafety and Patient Safety Rules\* concerning the patients, personnel and workplace.
- Observe the Rulebook for Dress Code<sup>2</sup>.
- Strictly observe the Regulations of Working with the Laboratory Animals<sup>3</sup>.
- Carefully preserve resources and equipment.
- Truly respect faculty members, the staff, classmates, and other students as well as creating a cordial and respectful atmosphere.
- Observe social and professional ethical considerations in constructive criticism.

1, 2 and 3 are contained in the Enclosures.

\* Biosafety and Patient Safety Rules will be set out by the Educational Departments and will be available to the students.



## Section II

**Title of the course:** Computing and clinical information systems

**Code of the course:** 01

**Number of credits:** 1

**Type of the course:** theoretical –practical

**Prerequisite:**

**Course objectives:** Introduction to software and IT skills

**Course description:** (9 hours theory and 17 hours practical)

- Concept and understanding of database
- Clinical data base systems in hospital
- principal of Binary
- Concept of processing data (Input, CPU, Output)
- Library systems
- Introduction to hardware
- Processing systems (Linux-Dos-Windows)
- Introduction to programs (Word, Excel, Power point, Photo shop, SPSS)
- Introduction to internet
- Definition and history of internet
- Using internet services (Email, News group, World wide web, Search engines, searching technique, Telemedicine, Telecare)
- Searching: principal of Search, Pubmed, full text, design searching strategy, performing effective search in valid medical databases.
- Basic understanding of correcting window's errors

### Student assessment

Assessment strategies of practical lessons are including: Objective, Continuous, student centered multidimensional performance.

**Title of the course:** Advanced statistics and research methodology

**The code of the course:** 02

**Number of credits:** 3

**Type of the course:** theoretical –practical

**Prerequisite:**

**Course objectives:** principals of research in medical science and ability of planning and critical discussion of researches.

**Description of the course:** (43 hours theory, 17 hours practical)

### **1. Advance statistic:**

- Basic principles and definitions; variable and dispersion, indicators tend to center, indicators of dispersion, indicators of distribution, systematic error, accuracy and precision, title.
- Creating a chart; histogram, line, scatter, overlay.
- Changing variables; common and outliers.
- Prediction and trial of a theory; statistic prediction and safe zone, assessment of theory, comparison of median and variance of two samples together, comparing the ratios in paired and none paired samples.
- Regression; simple flat regression, prediction of regression parameters, trial of regression parameters theory, comparison of two regression lines together, inverted regression.
- Analyses of variance; one way analysis variance, practical discussion according to the selection of students for group work.

### **2. Advance research methodology**

- An overview of research methodology.
- Introduction to research; history, definitions, types of quantitative studies, choosing a subject.
- Theoretical and conceptual framework, an overview of studies and methods of using resources.
- Objectives, questions, hypotheses and research limitations.
- Methodology such as; society, types of sampling, research environment, variables and comparison of them, types of data collection methods, validity and trusting the tools, presentation of data, data resources, methods of analyzing data, principal of ethics in research.
- Conclusion and suggestion of how to use collected data and research.
- An overview into the types of qualitative studies.
- Principals in analyzing data.

### **Student assessment**

- Continuous and final assessments.
- Assessing class activities.
- Assessment of home works, seminars and individual as well as group activities.
- Selection of a research topic and performing the research.

### **Resources**

1. Wood, GT, Habu, Gudith, Nursing research method, Critical appraisal utilization, Mosby. Latest edition.
2. Denizo F Polit, Bemadethe; Nursing Research. Latest edition.
3. Designing and conducting health system research projects, Corlien M. Varkevisser.
4. Szklo M, Nieto FJ, Epidemiology beyond the basics. Massachusette; Jones and Bartlett, latest edition.
5. Mohammad K, Malek Afzali H, Nahapetian H; (روشهای آماری و شاخصهای بهداشتی). Latest edition.
6. Other nursing's book, journals and publications.

**Title of the course;** introduction to critical care nursing

**Code of the course:** 04

**Number of credits:** 1

**Types if course:** theory

**Prerequisite:**

**Course objectives:** An introduction to the concept and definitions of critical care nursing.

**Course descriptions:** (17 hours)

1. Definition of critical care
2. Definition of critical care in different ICU settings such as:
  - General
  - Surgical
  - Medical
  - Burns
  - Neurology
  - Cancer
  - Immune compromised
3. The need and urgency for the course:
  - Current situation and statistics
  - Shortness of nurses
  - Increasing needs for critical care
  - The needs for this course in critical care training
4. Health policies, health economy and direction of them in the future
  - Health management and its cost
  - Human suffering and its influence on work force
  - Increase in critically ill patients
  - Effective use of current resources
  - Increase in elderly population
  - Expansion of critical care health in modern medicine
  - Rapid advance in medicine, nursing and related professions
5. Place of Iran in critical care medicine at present and in future
  - Our current place in health and delivering health care
  - Our current ranking in the region and the world
  - The future perspective and direction of critical care medicine in Iran
6. Definition of critical care
  - Correct definition of critical care medicine
  - Recognition of who needs critical care
  - Recognition of when to move patient out of critical care
  - Understanding of how to move patient to different setting in case of over admission
  - Critical care economy

7. Different setting in critical care
  - Specification of ICU, CCU and ER
  - Classification of different zones in critical care setting according to severity of condition (level 1, 2, 3)
  - Types of critical care units (general, medical, neurology, immune system compromised, surgical, neuro-surgery, trauma and burns, cardiac surgery, neonatal and specialized ICUs)
  - Epidemic natural crisis
  - Principles of isolation in critical care setting
8. Role and responsibility of nurses in critical care practice
  - Clinical roles: (clinical skills, ability of multi-task performance, critical thinking)
  - Academic roles : (academic thinking and analyzing, using scientific resources, understanding evidence base medicine)
  - Research methodology: (importance of research in medicine, computer methodology, computer skills, common practice, medical databases, computer as a tool in research, policy making in critical care nursing, motivating approach to critical care nursing, roles of management and leadership, participation in health policy making.
  - Educational roles: (lifelong learning, different learning activities during work, educational course and workshops, attending national and international congress)
  - Performance in accordance with critical care nursing practice: (positive view of nursing profession, positive view of critical care nursing, conflict resolution in critical setting, recognizing boundaries between doctors and nurses in critical care setting, respecting confidentiality in relation to patient's clinical information, behaving professionally with multidisciplinary team,

### **Student assessment**

- Written exam and assignments, presenting a seminar

### **Resources**

1. Alspach. Joanne; Core Curriculum for Critical Care Nursing. Last edition.
2. AACN Pocket Handbook of Critical Care Nursing, Marianne Chualy, Cathie Guzzetta, Barbara Dossey.

**Title of the course:** Nursing practice in critical setting

**Code of the course:** 05

**Number of credits:** 3

**Type of the course:** Theory

**Prerequisite:**

**Course objectives:** introduction to basic common nursing practice in different critical setting.

**Course description** (51 hours)

**1. General nursing**

- Basic nursing skills

**2. Skin integrity**

- Common skin conditions in critically ill patients
- Maintenance of skin health
- Health of hair and nails
- Bed sores
- Pathophysiology
- Classification of bed sores
- Impact of bed sore on patient's recovery and nursing decisions to promote healing

**3. Eye care**

- Common eye conditions in critically ill patients
- Signs and symptoms
- Principles of nursing and eye care of critically ill patients

**4. Oral care in critically ill patients**

- Common oral conditions in critically ill patients
- Signs and symptoms
- Oral health and hygiene
- Special oral care in critically ill patients
- Principles of nursing and oral care of critically ill patients

**5. Nutritional care**

- Importance of early nutritional intake in critically ill patients
- Types of nutrition in critically ill patients
- Nutritional assessment of critically ill patients
- Types of nutritional intake
- Malnutrition and its impact on the health of critically ill patients

**6. Emotional support of critically ill patients**

- Emotional and psychological problems of critically ill patients
- Psychological assessment of patients
- Nursing intervention

- Short and long term impact of hospitalization on the emotion of patients in critical care setting
- Sleep deprivation in critical care setting
- Multidimensional approach
- Clinical and psychological methods
- Social worker, police and clerics
- Social and family support
- Government, organization and NGO responsibilities

#### **7. Pain in critically ill patients**

- Understanding pain mechanism
- Pain assessment and recognizing painful positions
- Monitoring and classification of pain
- Principles of acute pain treatment
- Principles of acute pain management
- Nursing intervention

#### **8. Palliative end of life care for critically ill patients**

- Management of end stage patients
- Points to consider in critically ill patients
- Legality concerning end stage patient care
- Legality of brain dead patients
- Organ donation

#### **9. Moving and handling of critically ill patients**

- Chest and breathing rehabilitation
- Limbs rehabilitation
- Rehabilitation of other organs

### **Student assessment**

- Written exam and assignments, presenting a seminar

### **Resources**

1. Alspach. Joanne; Core Curriculum for Critical Care Nursing. Last edition
2. AACN Pocket Handbook of Critical Care Nursing, Marianne Chualy, Cathie Guzzetta, Barbara Dossey

**Title of the course:** Advance nursing observation

**Code of the course:** 06

**Number of credits:** 3

**Type of the course:** Theory

**Prerequisite:**

**Course objectives:** introduction to principals of nursing observation in critical setting.

**Course description** (51 hours)

**1. Obtaining clinical information**

- Obtaining and documenting the sources if clinical information
- Introducing yourself and critical care team
- Nonverbal communication skills
- Systematic collection of clinical information
- General nursing information
- Intensive care nursing information
- Vigilance in hazardous circumstances
- Patients Self-harming
- Patients harm to others
- Others harm to patient
- Hazardous equipment and transferring them through critical care setting
- Interpreting clinical information by critical care nurses
- Family information and attention to special circumstances
- Consideration of social, economic and psychology of patients' families

**2. Nursing clinical examination**

- Obtaining, documenting and reporting of accurate vital signs
- Gaining the necessary skills for invasive observation
- Systematic examination and holistic nursing
- Obtaining the data from mechanical ventilators
- Correct interpretation of clinical data
- Recognition and analyze of unpredictable circumstances
- Correct decision making according to care intervention priorities
- Correct nursing intervention
- Contacting critical care medical and other multidisciplinary team members at the right times

**3. Environmental observations**

- Hygiene and cleanliness of critical care setting
- Enter and exit of critical care units in relation to environmental cleanliness
- Quality of air in terms of freshness, temperature and humidity
- Cleanliness and correct arraignment of medical equipment
- Accessibility of medical equipment



- Routine check of medical equipment performance

#### **4. Infection observation**

- Correct sample collection of patients and staff
- Correct environmental sampling
- Assessment of infection
- Identifying factors in infection control
- Infection control strategy
- Principles of infection control
- Policy making in infection control
- Solutions to dedication in infection control
- Identifying hazardous behaviors in spreading infection
- Identifying hazardous behaviors in spreading infection to you, patients, medical staff and visitors
- Correct environmental and human sampling in infection control and identifying factors in infection epidemic

#### **5. Observation of nervous system**

- Non-invasive observations
- Homodynamic
- Factors in assessing conciseness and observation of conciseness level
- Observing the content of speech and thought
- 12 nerve
- Observation of motory system
- Observation of sensory system
- Technology of non-invasive nervous system observation
- Correct interpretation of clinical data and nursing interventions
- Invasive observation
- Principles and indication of intracranial pressure
- Obtaining the observation data of intracranial pressure

#### **6. Observation of cardiovascular system**

- Non-invasive cardiovascular observations
- Obtaining electrocardiogram (ecg) correctly
- Correct observation of ecg
- Measurement of cardiac factors in non-invasive way
- Observation of peripheral vascular system
- Non-invasive observation of blood pressure
- Invasive cardiovascular observations
- Invasive observation of blood pressure
- Observation of central venous pressure and maintenance of central catheters
- Venous artery catheter and obtaining related data
- Interpretation of pulmonary artery catheter's data
- Maintenance of pulmonary artery catheter
- Controversial cases of pulmonary artery catheter

#### **7. Observation of pulmonary system**

- Airway tract observation
- Number and depth of breaching pattern
- Signs and symptoms of breathing difficulties
- Assessment of breathing
- Correct analyze of clinical data and nursing intervention
- Advance breathing observation
- Principals of pulse oximetry and collecting data
- Principals of carbon dioxide non-invasive observation
- Principals of arterial blood gases
- Interpretation of arterial blood gases
- Principal of oxygen and oxygen delivery to tissues
- Continuous observation of arterial blood gases and its tests
- Introduction to the concept of pulmonary function tests in critical care nursing
- Findings of exhalation in ventilator data
- Analyze of data and nursing intervention
- 8. Observation of analgesia, sedative and muscle relaxant in critical care unites**
- Principals of acute pain management
- Assessment and classification of pain severity
- Analyzing data
- Correct nursing intervention
- Principals of sedatives in acutely ill patients
- Classification of sedative levels
- Analyze of data
- Correct nursing intervention
- Principals of muscle relaxants in critical care units
- Classification of muscle relaxant levels
- Analyze of data
- Correct nursing intervention
- 9. Nutritional observation**
- Principals of nutrition in critically ill patients
- Nutritional assessment in critical care units
- Factors in nutritional assessment
- Types of nutrition and methods of feeding in critical care setting
- 10. Laboratory and radiography skills**
- Correct and systematic sampling
- Types of radiography for critically ill patients
- Preparing medical tem for transferring patient
- Analyzing data
- Correct nursing intervention

### **Student assessment**

- Written exam and assignments, presenting a seminar

## **Resources**

1. Alspach. Joanne; Core Curriculum for Critical Care Nursing. Last edition
2. AACN Pocket Handbook of Critical Care Nursing, Marianne Chualy, Cathie Guzzetta, Barbara Dossey

**Title of the course:** Pharmacology

**Code of the course:** 07

**Number of credits:** 1

**Type of the course:** Theory

**Prerequisite:**

**Course objectives:** Introduction to the principal and definitions of pharmacology relating to critical setting.

**Course description** (17 hours)

Definitions of the process of drug action, absorption, distribution, elimination and the concept of recipients as well as mechanism of drugs effect, types of drugs, application of pharmacology in critical care nursing.

- **Effect of drugs in specific chronic diseases**
- Kidney failure, nerve
- Liver, heart, respiratory failure
- Other organs
- **Drugs interaction, overview, mechanism**
- Drugs side effects
- Individual reactions to effects of drugs

**Student assessment**

Written exam (including mid and end term)

**Resources**

1. Pharmacology for Nursing Care, Richatd A, Lehane Elsevier Health Science. Latest edition.
2. Pharmacology and the nursing process, Linda Lilley, Elsevier Health Science. Latest edition.

**Title of the course:** general topics in organ transplant

**Code of the course:** 08

**Number of credits:** 1

**Type of the course:** Theory

**Prerequisite:**

**Course objectives:**

**Course description:**

**1. Physiologic anatomy**

- Transplant in different organs: (Liquid organ transplant, solid organ transplant)
- Suppression of immune system
- Briefing in pharmacology of immune suppressant drugs

**2. Nursing assessment**

- Nursing information gathering
- Clinical examinations
- Nursing assessment in diagnose study
- Quick assessment of critically ill patients

**3. Common nursing diagnoses**

- Opportunistic infections relation to organ transplant (liquid transplant, solid transplant)
- General concept of organ rejection
- Patients protection ( mucosa and intestine protection, isolation and carefulness in infectious cases, emotional and psychological protection of patients and their families)

**4. Clinical complications**

- Opportunistic infections specific to organ transplant
- Topics of organ rejection in relation to each organ

**Student assessment**

Written exam, presenting homework and seminar

**Resources**

1. Alspach. Joanne; Core Curriculum for Critical Care Nursing. Last edition
2. AACN Pocket Handbook of Critical Care Nursing, Marianne Chualy, Cathie Guzzetta, Barbara Dossey

**Title of the course:** Respiratory system

**Code of the course:** 09

**Number of credits:** 3

**Type of the course:** placement

**Prerequisite:** Introduction to critical care nursing, nursing practice in critical care units, advance nursing observation, pharmacology, general topics in organ transplant nursing

**Course objectives:** Introduction to principals of respiratory system nursing and the necessary skills required in nursing patient with respiratory conditions

**Course description:** (26 hours theory, 77 hours placement)

**1. Respiratory system**

- Airways
- Gas exchange process
- Hypoxia, hypercapnia

**2. Nursing assessments**

- Patients information
- Clinical nursing examinations
- Nursing assessment in diagnose study
- Quick assessment of critically ill patients

**3. Common nursing diagnoses**

- Patient's disability in clearing airways
- Ineffective breathing patterns
- Breathing mechanism
- Patient's disability in normal breathing
- Disruption in gas exchange
- Mechanical ventilation and synchronization of patient and ventilation machines

**4. Specific clinical conditions**

- Acute respiratory failure
- Respiratory distress syndrome
- Chronic obstructive pulmonary disease (COPD)
- Airway tract diseases and asthma
- Pneumonia and different types of it
- Aspiration syndrome
- Acute respiratory diseases
- Sleep apnea
- Nursing tips in pulmonary transplant
- Thrombus venues embolism and prevention
- Deep vein embolism and prevention
- Pulmonary embolism

**Student assessment**

- Written exam, presenting homework and seminar
- Student assessment according to evaluation form clinical homework

**Resources**

1. Alspach. Joanne; Core Curriculum for Critical Care Nursing. Last edition
2. AACN Pocket Handbook of Critical Care Nursing, Marianne Chulay, Cathie Guzzetta, Barbara Dossey
3. Black J: Hawak,J: Medical Surgical Nursing, Clinical management of positive outcomes 7<sup>th</sup> edition. Elsevier saunderis Co. Last edition

**Title of the course:** special critical care nursing 2 (cardiovascular system, cardiac surgery and thoracic)

**Code of the course:** 10

**Number of credits:** 3

**Type of the course:** placement

**Prerequisite:** Introduction to critical care nursing, nursing practice in critical care units, advance nursing observation, pharmacology, general topics in organ transplant nursing

**Course objectives:** Introduction to principals of cardiovascular nursing, cardiac surgery and thoracic

**Course description** (26 hours theory, 77hours placement)

**1. Cardiovascular system**

- Physiologic anatomy
  - Anatomy of heart
  - Heart muscle
  - Heart valves
  - Anatomy of coronary arteries
  - Anatomy of heart's chambers
- Heart physiology
  - Contraction of heart muscles
  - Cardiac cycle
  - Cardiac output and its variables
  - Systemic vessels
  - Blood pressure
- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Common nursing diagnoses
  - Decrease in heart output
  - Chest pain
  - Intolerance of physical exercise and topic relating to heart failure
- Specific clinical conditions
  - Coronary artery diseases
  - Angina and its types
  - Heart attack
  - Heart failure and cardiomyopathy
  - Pericardial diseases
  - Infectious endocarditis



- Myocarditis
- Arrhythmia
- Irregular heartbeat
- Normal rhythm
- Disruption in pacemaker
- Disruption in conductivity
- Valve diseases
- Mitral valve diseases
- Aortic valve diseases
- Pulmonary valve diseases
- Heart and large vessels abnormalities
- Atrial wall defect
- Ventricular wall defect
- Patent ductus arteriosus
- Coarctation of the aorta
- Rare defects
- Hypertension
- Peripheral vascular and aortic diseases
- Shock and types of shocks

## **2. Cardiac and thoracic surgery**

- Nursing assessments
- Clinical information
- Clinical nursing examinations
- Nursing assessment in diagnose study
- Quick assessment of critically ill patients
- Specific clinical problems
- Types of practical interventions and cardiac /thoracic surgery
- Complications of cardiovascular and thoracic surgery
- Maintenance of chest drains and mediastinum
- Nursing care of patients undergoing cardiovascular and thoracic surgery

### **Student assessment**

- Written exam, presenting homework and seminar
- Student assessment according to evaluation form clinical homework

### **Resources**

1. Underhill and Wood; Cardiac Nursing, fourth edition, Saunders Co,2008
2. Black J; Hawak J; Medical Surgical Nursing. Clinical management for positive outcomes. Elsevier saunders, last edition
3. AACN Pocket Handbook of Critical Care Nursing, Marianne Chualy, Cathie Guzzetta, Barbara Dossey
4. Alspach. Joanne; Core Curriculum for Critical Care Nursing. Last edition

**Title of the course:** special critical care nursing 3 (nervous system-neuro-surgery and Psychiatric disorders)

**Code of the course:** 11

**Number of credits:** 2

**Type of the course:** placement

**Prerequisite:** Introduction to critical care nursing, nursing practice in critical care units, advance nursing observation, pharmacology, general topics in organ transplant nursing

**Course objectives:** Introduction to principals of nervous system nursing, neuro-surgery and Psychiatric disorders)

**Course description** (17 hours theory, 51 hours placement)

**1. Nervous system**

- Physiologic anatomy
  - Brain
  - Spinal cord
  - Peripheral nervous system
- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Common nursing diagnoses
  - Brain's blood circulation and its disorders
  - Consciousness level disorder
  - Cleaning methods and issues guidance
  - Breathing patterns
  - Disorders of fluid and electrolyte balance and central effects
  - Lack of fluid
  - An increase in body fluids
  - Diabetes insipidus and inappropriate secretion syndrome (inappropriate antidiuretic hormone (ADH)
  - Sodium loss relating to brain disorders
  - Impaired verbal communication disorder
  - Physical disabilities
  - Changes in thinking process
  - Patients and families cope with diseases of nervous system
- Specific clinical conditions
  - Increase in intracranial pressure
  - Head injuries
  - Cerebral vascular accident

- Intracranial haematoma and its types
- Meningitis and intracranial infections
- Epilepsy and other diagnostic disorders
- Encephalopathy
- Spinal cord injuries
- Diseases of muscles nerve
- Awakening from general anesthesia

## **2. Neurosurgery**

- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Specific clinical conditions
  - Types of interventions and surgery of nervous system
  - Complications relating to interventions and surgery of nervous system
  - Maintenance of cervical drains
  - Nursing care of patients undergoing neuro-surgery

## **3. Psychiatric disorders**

- Psychiatric emergencies
- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Specific clinical problems
  - Identifying psychiatric emergencies
  - Nursing perspectives of psychiatric emergencies
  - Patient and family support
  - Increase in sensory stimulates
  - Lack of sensory stimulates

### **Student assessment**

- Written exam, presenting homework and seminar
- Student assessment according to evaluation form clinical homework

### **Resources**

1. Nursing diagnoses in psychiatric nursing; Nursing care plan and psychotropic medications by Mary C, Townsend
2. Linda S. Beeber, APRN, BC, PHD. Psychiatric& mental health nursing. Lippincott Williams & Wilkins. Philadelphia. Latest edition

3. Black J; Hawak J; Medical Surgical Nursing. Clinical management for positive outcomes. Elsevier saunders, last edition
4. AACN pocket handbook of critical care nursing, Marianne Chulay, Cathie Guzzetta, Barbara Dossey

**Title of the course:** special critical care nursing 4 (renal system and urinary tract, surgery of kidney and urinary tract)

**Code of the course:** 12

**Number of credits:** 2

**Type of the course:** placement

**Prerequisite:** Introduction to critical care nursing, nursing practice in critical care units, advance nursing observation, pharmacology, general topics in organ transplant nursing

**Course objectives:** Introduction to the principal of critical care nursing relating to renal system and surgery of kidney and urinary tract

**Course description:** (17 hours theory, 51 hours placement)

**1. Renal system and urinary tract**

- Physiologic anatomy
  - Anatomy of kidney and urinary tract
  - Physiology of kidney
  - Formation of urine
  - Hemodynamic of kidney
  - Balance of body fluid
  - Balance of electrolytes
  - Kidney disorders acidosis and alkaline
  - Balance of kidney's blood pressure
- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Common nursing diagnoses
  - Condition of body fluid balance
  - Acidosis and alkaline disorder
  - Uremic syndrome
  - Kidney and urinary tract infections
  - Kidney disease and its effect of bone condition
  - Secretion and elimination of medications and toxins
- Specific clinical conditions
  - Acute kidney failure
  - Chronic kidney failure
  - Electrolytes imbalance (potassium, sodium, calcium, magnesium and phosphorus imbalance)
  - Kidney trauma
  - Replacement therapies of kidney

- Peritoneal dialysis
- Hemodialysis
- Permanent kidney replacement
- Plasmapheresis
- Nursing tips in kidney transplant

## **2. Surgery of kidney and urinary tract**

- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Common nursing diagnoses
  - Types of intervention procedures and surgeries of kidney and urinary tract
  - Complications of intervention procedures and surgeries of kidney and urinary tract
  - Topics relating to kidney transplant surgery
  - Nursing care of patients undergoing kidney and urinary tract surgery

### **Student assessment**

- Written exam, presenting homework and seminar
- Student assessment according to evaluation form clinical homework

### **Resources**

1. Black J; Hawak J; Medical Surgical Nursing. Clinical management for positive outcomes. Elsevier saunders, last edition
2. AACN Pocket Handbook of Critical Care Nursing, Marianne Chualy, Cathie Guzzetta, Barbara Dossey
3. Alspach. Joanne; Core Curriculum for Critical Care Nursing. Last edition

**Title of the course:** special critical care nursing 5 (Endocrine glands and Obstetrics and Gynecology)

**Code of the course:** 13

**Number of credits:** 1

**Type of the course:** placement

**Prerequisite:** Introduction to critical care nursing, nursing practice in critical care units, advance nursing observation, pharmacology, general topics in organ transplant nursing

**Course objectives:** Introduction to the principal of critical care nursing relating to Endocrine glands and Obstetrics and Gynecology diseases

**Course description:** (9 hours theory, 26 hours placement)

**1. Endocrine system**

- Physiologic anatomy
  - Basic concepts of endocrine glands
  - Pituitary or hypophysis gland
  - Thyroid gland
  - Parathyroid gland
  - Adrenal or suprarenal gland
  - Pancreas gland
  - Sex hormones
- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Common nursing diagnoses
  - Glands and metabolic disorders
  - Changes in body fluid
  - Changes in diet and nutrition
  - Topic relating to hormone therapy
- Specific clinical conditions
  - Diabetes insipidus
  - Inappropriate secretion syndrome ADH
  - Thyroid and parathyroid diseases
  - Hyperactive thyroid
  - Hypoactive thyroid and related coma
  - Hyper/hypo-active parathyroid
  - Adrenal/suprarenal gland
  - Hypoactive suprarenal gland
  - Hyperactive suprarenal gland

- Diabetes
- Diabetes emergencies
- Diabetic ketoacidosis (DKA)
- Hyperosmolar coma
- Hypoglycemic coma

## **2. Obstetrics and Gynecology diseases**

- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Specific clinical problems
  - Types of intervention procedure and surgeries of Obstetrics and Gynecological surgery
  - Complications of intervention procedure and surgeries of Obstetrics and Gynecological
  - Topics relating to Obstetrics and Gynecology nursing practice
  - Nursing care of patients undergoing Obstetrics and Gynecological surgery

### **Student assessment**

- Written exam, presenting homework and seminar
- Student assessment according to evaluation form clinical homework

### **Resources**

1. Black J; Hawak J; Medical Surgical Nursing. Clinical management for positive outcomes. Elsevier saunders, last edition
2. AACN Pocket Handbook of Critical Care Nursing, Marianne Chualy, Cathie Guzzetta, Barbara Dossey
3. Alspach. Joanne; Core Curriculum for Critical Care Nursing. Last edition



**Title of the course:** special critical care nursing 6 (digestive system-abdominal and pelvic surgery)

**Code of the course:** 14

**Number of credits:** 2

**Type of the course:** placement

**Prerequisite:** Introduction to critical care nursing, nursing practice in critical care units, advance nursing observation, pharmacology, general topics in organ transplant nursing

**Course objectives:** Introduction to pathology, pathogens and nursing care of patients with diseases of digestive system undergoing abdominal and pelvic surgery

**Course description:** (17 hours theory, 51 hours placement)

**1. Digestive system**

- Physiologic anatomy
  - Upper digestive system
  - Lower digestive system
  - Defensive systems of digestive tract
  - Other organs of digestive system
- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Common nursing diagnoses
  - Nutritional disorder
  - اختلالات سطح نخایی
  - Acute abdomen
  - Ascites and its treatments
- Specific clinical conditions
  - Acute pancreatitis
  - Bleedings of digestive system
  - Hepatitis
  - Liver failure and hepatic encephalopathy
  - Chronic liver failure
  - Types of abdominal trauma
  - Intestine inflammatory diseases
  - Intra-abdominal infections
  - Acute abdominal compartment syndrome
  - Nutrition in critically ill patient

**2. Abdominal and pelvic surgery**

- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Specific clinical problems
  - Types of intervention and abdominal and pelvic surgeries
  - Complications in and abdominal and pelvic surgeries
  - Maintenance of drains and intra-abdominal pressure
  - Nursing care of patients undergoing abdominal and pelvic surgery

### **Student assessment**

- Written exam, presenting homework and seminar
- Student assessment according to evaluation form clinical homework

### **Resources**

4. Black J; Hawak J; Medical Surgical Nursing. Clinical management for positive outcomes. Elsevier saunders, last edition
5. AACN Pocket Handbook of Critical Care Nursing, Marianne Chualy, Cathie Guzzetta, Barbara Dossey
6. Alspach. Joanne; Core Curriculum for Critical Care Nursing. Last edition

**Title of the course:** special critical care nursing 7 (oncology and blood, immune system and infectious diseases)

**Code of the course:** 15

**Number of credits:** 2

**Type of the course:** placement

**Prerequisite:** Introduction to critical care nursing, nursing practice in critical care units, advance nursing observation, pharmacology, general topics in organ transplant nursing

**Course objectives:** Introduction to critical blood diseases and oncology (pathology, pathogens, care) of infectious diseases which cause critical situation, immune disorder and their complications

**Course description:** (17 hours theory, 51 hours placement)

**1. Oncology and blood**

- Physiologic anatomy
  - Anatomy and physiology of The circulatory system
  - Mechanism of change in tumor cell
- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Common nursing diagnoses
  - Infection prevention disorder
  - Gas exchange inefficacy in anemia
  - Danger of blood loss (bleeding)
  - Shock
  - Overview of autoimmune disorder
  - Gas exchange disorder in anemia and blood loss
  - Patient and family circumstances in blood cancers
- Specific clinical conditions
  - Anemia
  - Increase in blood Coagulability inside blood vessels
  - Disorders relating to increase in blood Coagulability
  - Neutropenia
  - Acute leukemia

**2. Infectious and immune diseases**

- Physiologic anatomy
  - Components of immune system
  - Infection mechanisms
  - Types of infections

- Types of antibiotics and their properties
- Mechanism of autoimmune disorder
- Nursing assessment
- Obtaining clinical information
- Clinical nursing examinations
- Nursing assessment in diagnose study
- Quick assessment of critically ill patients
- Common nursing diagnoses
- Sepsis and its complications
- Immune system disorders and infections
- Infectious epidemic management strategies
- Specific clinical conditions
- Intracranial infections
- Head and neck infections
- Respiratory system infections
- Infectious endocarditis and pericarditis
- Viral hepatitis and other liver infections
- Biliary pancreas infections
- Pelvic, urinary system and genital infections
- Soft tissue infection
- Catheter and other internal device infections
- Sepsis and sepsis shock
- TB and its complications
- Aids and its complications
- Rare and epidemic infections
- Allergic reactions
- Collagen diseases
- Problems relating to collagen diseases on vessel's inflammation
- Acute tumor lysis syndrome
- Opportunist infections

### **Student assessment**

- Written exam, presenting homework and seminar
- Student assessment according to evaluation form clinical homework

### **Resources**

7. Black J; Hawak J; Medical Surgical Nursing. Clinical management for positive outcomes. Elsevier saunders, last edition
8. AACN Pocket Handbook of Critical Care Nursing, Marianne Chualy, Cathie Guzzetta, Barbara Dossey
9. Alspach. Joanne; Core Curriculum for Critical Care Nursing. Last edition

**Title of the course:** special critical care nursing 8 (basic principles of nursing care in traumatic injuries)

**Code of the course:** 16

**Number of credits:** 3

**Type of the course:** placement

**Prerequisite:** Introduction to critical care nursing, nursing practice in critical care units, advance nursing observation, pharmacology, general topics in organ transplant nursing

**Course objectives:** Introduction to pathology, pathogens, nursing care in traumatic injuries and surgery (traumatology)

**Course description:** (26 hours theory, 77 hours placement)

**1. Main principles of surgery**

- Anatomy of surgery for critical care nurses
- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Common nursing diagnoses
  - Fluid and electrolytes disorders
  - Nutritional plans
  - Prevention of surgical complications in critically ill patients (deep vein thrombosis or DVT, digestive system bleeds, surgical infections)
  - Care of surgical wounds and its complications
  - Holistic care
  - Care of patient and family in special circumstances

**2. Special care in traumatic injuries (traumatology)**

- General aspect of injuries
  - Types of physical injuries
  - Mechanism of injuries
  - Body response to injuries
  - Field management in accident scene and transfer of injured
  - Unpredictable accidents and their managements
- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Common nursing diagnoses
  - Extensive, multi-organ injury

- Holistic approach
- Identifying patient and family in critical situations
- Supportive nursing interventions
- Specific clinical conditions
- Nervous system injuries (types of nervous injuries, principles of care and support in central nervous system injuries, nursing approach in nervous system injuries)
- Spinal cord and its injuries (principle of support in injuries of spinal cord, nursing approach in injuries of spinal cord)
- Thoracic (chest) injuries (anatomical considerations, types of chest injuries, nursing approach in chest injuries, nursing care of chest drains)
- Abdominal injuries (anatomical considerations, types of abdominal injuries, nursing approach in abdominal injuries, nursing care of abdominal drains, catheter and colostomy)
- Pelvic injuries (anatomical considerations, types of pelvic injuries, nursing approach in pelvic injuries, nursing care of drains and catheters)
- Limb and peripheral vascular injuries (overview of limbs and peripheral vascular injuries, overview of fractures and nursing care, soft tissue and peripheral nerve injuries, vascular injuries and its observations, compartment syndrome)
- Acute burns and respiratory injuries (mechanism and types of burns, infections, pain and mental issues in burns, nursing approach in burns, nursing interventions in burns patients, mechanism and types of respiratory injuries, assessment of severity of respiratory injury, nursing approach in respiratory injuries)
- Environmental injuries (hypothermia and heat exhaustion, electrical injuries, chemical injuries, bioterrorism and weapons of mass destruction, radiation injuries, nursing approach in environmental injuries)
- Poisoning (types of poisoning, general symptoms of poisoning, nursing interventions and approach in poisoning)

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### **Resources**

1. Black J; Hawak J; Medical Surgical Nursing. Clinical management for positive outcomes. Elsevier saunders, last edition
2. AACN Pocket Handbook of Critical Care Nursing, Marianne Chualy, Cathie Guzzetta, Barbara Dossey
3. Alspach. Joanne; Core Curriculum for Critical Care Nursing. Last edition

**Title of the course:** special critical care nursing (vascular and orthopedic surgery)

**Code of the course:** 17

**Number of credits:** 1

**Type of the course:** placement

**Prerequisite:** Introduction to critical care nursing, nursing practice in critical care units, advance nursing observation, pharmacology, general topics in organ transplant nursing

**Course objectives:** Introduction to pathology, pathogens, nursing care in vascular and orthopedic surgery

**Course description:** (9 hours theory, 26 hours placement)

**1. Vascular surgeries**

- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Specific clinical conditions
  - Types on intervention procedures and vascular surgeries
  - Complications of intervention procedures and vascular surgeries
  - Nursing care of patients undergoing vascular surgery

**2. Orthopedic surgery**

- Nursing assessment
  - Obtaining clinical information
  - Clinical nursing examinations
  - Nursing assessment in diagnose study
  - Quick assessment of critically ill patients
- Specific clinical conditions
  - Types on intervention procedures and orthopedic surgeries
  - Complications of intervention procedures and orthopedic surgeries
  - Nursing care of patients undergoing orthopedic surgery

**Student assessment**

- Written exam, presenting homework and seminar
- Student assessment according to evaluation form clinical homework

## **Resources**

4. Black J; Hawak J; Medical Surgical Nursing. Clinical management for positive outcomes. Elsevier saunders, last edition
5. AACN Pocket Handbook of Critical Care Nursing, Marianne Chualy, Cathie Guzzetta, Barbara Dossey
6. Alspach. Joanne; Core Curriculum for Critical Care Nursing. Last edition