



Quality Assurance Unit



Tanta University  
Faculty of Medicine

**Department of Anesthesiology, Surgical intensive  
care**

**Course Specifications**

**Physics and monitoring for  
Anesthesiology, Surgical intensive  
care**

**Doctorate degree**

**2014**

Course Specifications of Physics and monitoring for Anesthesiology, Surgical intensive care for Doctorate degree

University: Tanta

Faculty: Medicine

Department: Anesthesiology,  
Surgical intensive care

### **A- Administrative Information**

- 1. Course title: Physics and monitoring for Anesthesiology, Surgical intensive care for Doctorate degree**
- 2. Department offering the course: Anesthesiology, Surgical intensive care and Pain management**
- 3. Department responsible for the course: Anesthesiology, Surgical intensive care and Pain management**
- 4. Course code: ANES 9003**
- 5. Level: first part.**
- 6. No. of Credit / taught hours:**  
**-credit hours:**
  - **Theoretical: 4 hours/week X 15 weeks =60 hours (4 credit hour)**
  - **Practical : 4 hours/week X 15 weeks =60 hours (2 credit hour)**
- 7. Authorization date of course specification:.**

### **B- Professional Information**

#### **1 – Overall Course aims**

By the end of the course, the student should become fully acquainted with the physical principles related to anesthesia, recognize how to deal with different equipment efficiently and safely and to perform and make use of various types of essential clinical measurements in order to avoid hazards that may affect patient safety.

#### **2 – Intended learning outcomes (ILOs):**

##### **A- knowledge and understanding:**

By the end of the course, student should be able to:

- A1) Understand physical principles of machines, equipments and tools used in anaesthetic practice.
- A2) Identify the safety measures that should be followed during practice.
- A3) Recognize the principles of different clinical measurements.

**B-intellectual skills**

By the end of the course, student should be able to:

- B1) analyze of the data obtained from monitors.
- B2) interpret values gained from different monitors.
- B3) detect any anesthetic system failure.

**C-Professional &practical skills**

By the end of the course, student should be able to:

- C1) check proper performance of anesthetic machine and different equipment.
- C2) practice different techniques and methods for measurement of different vital data adequately in a proper time with minimal errors.
- C3) deal with troubleshooting of anesthetic machine and different apparatus.

**D-General transferable (attitude and communication) skills**

By the end of the course, student should be able to:

- D.1) Communicate and deal with patients with the proper ethical manners.
- D.2) Apply and work in a team with his colleagues (the team leader and the assistants), nursing staff and doctors of other specialties in the operating room
- D.3) work as a team leader in the setting of O.R., CPR, and trauma care
- D.4) Supervise a team composed of a number of specialists or residents running more than one O.R. at the same time with maximum safety

**3-Course contents**

Topics	lecture	Clinical/ lab
• Physics and monitoring	30	30

Topics	NO. of HOURS	
	lectures	practical
Introduction		
- SI units ( basic – derived ) - Behavior of gases & Gas laws - Medical gas supply - Pressure Gauges & Pressure Regulators - Flow, Viscosity, Density ,Surface tension ,Osmosis	1.5	1.5
- Gas diffusion & Solubility of gases in liquids - Uptake & Distribution of inhalation anesthetics	1	1
- Anesthetic breathing systems	1	1

***Physics and monitoring for Anesthesiology, Surgical intensive care for Doctorate degree,  
Course Specifications: 2014***

-Radiology . x- ray , Radiation safety . radioactive isotopes . ultrasound technology . laser	4	4
- EEG , Evoked potentials	2.5	2.5
-Safety measures in anesthetic machine	1	1
-Electricity ( principles, electronics ,pace maker, defibrillators , electrocution )	1.5	1.5
-Heat & Temperature	1	1
-Humidity & Nebulizers	1	1
-Vaporizers	1.5	1.5
-Ventilators	1	1
-Respiratory functions	1	1
-Pollution in OR & Scavenging systems -Fires & Explosions in OR	1	1
-Measurement of arterial blood pressure	1	1
-Measurement of CVP	1	1
-Measurement of pulmonary artery pressure	1	1
-Measurement of neuro-muscular blockade	1	1
-Measurement of humidity	1	1
-Measurement of CO <sub>2</sub> ; Capnography	1	1
-Measurement of O <sub>2</sub> ; Pulse Oximetry	1	1
-Measurement of cardiac output	1	1
-Measurement of temperature	1	1
-Flowmeters	1	1
- Mass spectrometer	1	1
<b>Total hours (Actual hours)</b>	<b>30</b>	<b>30</b>

#### **4-Teaching and learning methods**

Lectures, seminars, journal clubs, case presentation, assignments, conference participation observation and hands on practice in operating theaters and surgical ICU.

## **5-Student Assessment**

5.1 MCQ end semester exam

5.2 written examination to assess (a1,2,3,-b1,2,3)

5.3 oral examination. One sitting (3 staff members included in this sitting) To assess (a1,2,3-b1,2,3-c1,2,3-d1,2,3,4)

## **6- Weighing of assessments**

End semester exam	C+ required for attendance of final exam
Final term written examination	60% (90 degree)
Oral examination	40% ( 60 degree)
Total	100% ( 150 degree)

## **7- List of references**

### **Course notes**

Lecture notes from Anesthesiology, Surgical intensive care and Pain management

### **Text book**

#### **Essential Books (Text Books)**

- Anesthesia by Miller RD 6th edition, Elsevier Churchill Livingstone, New York, 2010.
- Lee's Synopsis of Anesthesia by: Davies NJH, Cashman JN, 13th edition, Elsevier, UK 2005.
- The ICU Paul L. Marino, 2<sup>nd</sup> edition, Lippincott Williams & Wilkins, Philadelphia 2012.

#### **Recommended Books**

- Stoelting's Anesthesia and Co-existing disease, 6th edition, By: Hines RL, Marschall KE, 2008, Elsevier Churchill Livingstone 2012.
- Anesthesiology: Problem-oriented patient management 7th edition, By: Yao FSN, Artusio JF, Lippincott Williams & Wilkins, Philadelphia 2012.

### **Web Sites**

- British Journal of Anaesthesia
- ASA Refresher Course Lectures
- Anesthesiology
- Anesthesia Analgesia
- Egyptian journal of anesthesia
- Journal of Anesthesiology.
- American Society of Anesthesiologists.
- European Journal of Anesthesiology.

## **8-Other resources/ facilities required for teaching and learning to achieve the above ILOs**

The department has regular daily lists in different operative theaters.

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The department has Surgical ICU unit for postoperative care.

Free Internet access for international data bases is available for all doctorate students through the faculty postgraduate library

The essential text books for this course are available either in department or faculty library

**9-we certify that all of the information required to deliver this course is contained in the above specifications and will be implemented**

We verify that the above Course and the analysis of students and external evaluator opinions are accurate.

Course coordinator and head of department

name.....signature.....Date.....

Head of quality assurance unit:

name.....signature.....Date.....