



Cairo University
Faculty of Medicine

Program Specification for Master Degree in
Anesthesia, Surgical ICU and Pain Management

Program type: Single

Department offering program: Anesthesia, Surgical ICU and Pain Management Department

Program code: ANES 800

Total credit points: 175

Academic year: 2016/2017

Program Director:

- Prof. Ahmed Shash, M.D., Professor and head of the department of Anesthesia, Surgical ICU and Pain Management, Kasr Alainy School of Medicine, Cairo University.

Program coordinators:

- Prof. Manar Elkholy, M.D., JMHP. Professor of Anesthesia, Surgical ICU and Pain management, Kasr Alainy School of Medicine, Cairo University.

External evaluator:

Professor Gamal Fouad Saleh Zaki, MD. Professor of Anesthesia and ICU, School of Medicine, Ain Shams University.

I. Aim of Program

To provide the knowledge, skills and attitudes necessary to provide safe and effective management of ASA 1-3 patients as a specialist in the field of anesthesia, surgical ICU and pain management.



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II. Intended Learning Outcomes of the Program (ILOs)

A. **Knowledge and Understanding:** By the end of the program the candidate should be able to:

1. Recognize the anatomical details of the different organs and systems of specific importance for the peri-operative anesthesia care practice.
2. Identify the surface landmarks necessary for vascular access, regional nerve block, cricothyroidotomy as well as chest tube insertion.
3. Describe the physiological functions of different body systems.
4. Explain the principles of pharmacodynamics and pharmacokinetics of a wide range of drugs that are frequently used in per-anesthetic practice.
5. Describe the pharmacodynamics and pharmacokinetics of the anesthetic drugs including inhalational & intravenous anesthetics, muscle relaxants, local anesthetics, sedatives and hypnotics.
6. Describe the diseases that are commonly encountered during anesthetic practice e.g. ischemic heart disease, hypertension, DM and asthma.
7. Describe the pathophysiology of a wide group of medical emergencies that anesthesiologists commonly are confronted with preoperatively in E.R, O.R, ICU and ward e.g. diabetic ketoacidosis, status asthmaticus, thyrotoxic crisis, Addisonian crisis, hypertensive encephalopathy, uremic coma and hepatic coma.
8. Recognize different physical laws that are applied in anesthesia and ICU practice.
9. Recognize different measuring systems and monitoring devices important for delivery of safe anesthesia.
10. Identify different parts of the anesthesia machine including flowmeter, vaporizer, ventilator, etc.
11. Describe the ABC approach for trauma patients to manage life-threatening illness.
12. Identify different pain assessment tools e.g. visual analogue scales, numerical rating scale, etc.
13. Identify different tools for acute surgical and non-surgical pain relief.
14. Define critical incidents during peri-anesthesia care management.

B. **Intellectual Skills:** By the end of the program the candidate should be able to:

1. Categorize patients according to different scoring systems e.g. Glasgow coma scale, ASA classification and trauma scale.



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2. Identify the different anatomical surface markings related to anesthesia and the different areas relevant to venous or arterial access as well as chest tube insertion.
3. Interpret the normal anatomical structures on radiographs, C.T. scans and magnetic resonance images.
4. Plan the proper technique of anesthesia (general, regional or local anesthesia).
5. Explain limitations and expected complications of the selected anesthetic technique.
6. Correlate the clinical anesthetic intervention and the accompanying physiological responses.
7. Define the indications, contraindications, dosage and complications of drugs used for premedication, anesthesia as well as analgesics and muscle relaxants.
8. Describe the required preoperative investigations according to the medical status and the surgical procedure.
9. Interpret data relevant to the clinical setting e.g. respiratory function tests, laboratory investigations and radiological findings.
10. Calculate perioperative fluid requirement.
11. Interpret readings of the standard monitors attached to the patient (Pulse oximetry, non-invasive blood pressure, heart rate and capnography) as well as additional monitors as central venous pressure, invasive arterial blood pressure and bispectral index, BIS.
12. Define the pathophysiology and the management of a wide range of emergencies as shock, pulmonary embolism, arrhythmias, diabetic ketoacidosis, etc.

C. Professional and Practical Skills: By the end of the program the candidate should be able to:

1. Insert intravascular lines, both central and peripheral venous and arterial lines, as per the local policies and procedures.
2. Analyze the medical history of the patient.
3. Design individualized perioperative plan based on medical background and the type of surgery.
4. Prescribe the proper premedication.
5. Assess the difficulty in airway management.
6. Fulfill the perioperative anesthesia records; preoperative sheet, intraoperative sheet, recovery and discharge sheet and medical report.
7. Obtain an informed consent from the patient or his/her guardian.
8. Set up anesthesia machine and its connections as well as the monitors preoperatively.
9. Manage airway in a safely and most appropriately.



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10. Execute the plan of peri-anesthesia care safely and effectively in elective as well as emergency procedures in adult and children ASA 1-3 patients.
11. Apply and maintain the popular modes of ventilation in the operating theatre and ICU; IPPV, PCV, etc.
12. Check the discharge criteria from recovery area as well as ICU.
13. Perform the spinal, lumbar and thoracic epidural and caudal block safely and effectively.
14. Perform a wide range of local anesthesia safely and effectively; peripheral nerve block, femoral nerve block, axillary nerve block, etc.
15. Assess acute pain either surgical or non-surgical.
16. Manage post operative pain in different age groups safely and effectively by neural blockade, patient controlled analgesia, etc.
17. Recognize and manage cardiac and respiratory arrest (basic and advanced life support).
18. Administer fluid and blood as per the local protocol.
19. Interpret the bedside investigations e.g. Focused Assessment Sonography in Trauma FAST.

D. General and Transferable Skills: By the end of the program the candidate should be able to:

1. Interact professionally toward patients, families, colleagues, and all members of the health care team.
2. Appreciate the social context of illness.
3. Respect and apply the basic ethical concepts; confidentiality, autonomy, benefices, non-maleficence and justice.
4. Understand professionalism concepts of integrity, altruism and conflict of interest.
5. Increase self-awareness to identify methods to manage personal and professional sources of stress and burnout.
6. Increase knowledge and awareness of personal risks concerning drug/alcohol abuse for self and colleagues, including referral, treatment and follow-up.
7. Develop and implement strategies for filling gaps in knowledge and skills.
8. Commitment to professional scholarship, including systematic and critical perusal of relevant print and electronic literature, with emphasis on integration of basic science with clinical medicine, and evaluation of information in light of the principles of evidence-based medicine.
9. Utilize the multidisciplinary resources necessary for optimum care of day cases and hospitalized patients.



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10. Predict when to ask for help and advice from senior residents and attending physicians.
11. Collaborate effectively with other members of the health care team, including residents at all levels, nurses, clinical pharmacists, radiology technicians and medical clerks.
12. Develop different learning and teaching skills including computer skills, presentations skills and write scientific articles according to the basics of scientific research.
13. Maintain a professional image concerning behavior, dress, speech, and responsibility.
14. Show effective teamwork attitude as a team member and team leader.

III. Academic Standards

1. Academic reference standers: The academic standers of anathesia program is adopted and accredited by the departmental council

2. External References for Standards:

External references for standards:

Syllabus for FCARCSI (United Kingdom)

IV. Program Admission Requirements

According the Faculty of Medicine, Cairo University Bylaws for Post Graduate Programs, July 2009, that was modified in 2012, applicants should have M.B.B. Ch or equivalent degree.

According to Cairo University requirements, all applicants for postgraduate studies should fulfill preliminary courses on the following subjects; Medical statistics I – English language (Toefl or equivalent degree) – Computer skills (ICDL) or equivalent computer course offered by the Medical Education Center (MEDC). Admission to the program is open during July. Training prior to registration may be accredited according to departmental and hospital evaluation.



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V. Program Structure and Contents

Program duration: Three academic years.

Program structure: Total Credit points 175

- First part: 1.5 years - Total credit points 65 - (Table 1)
 - Compulsory courses (30 weeks)
 - Anatomy 1 credit point
 - Physiology 3 credit points
 - Pharmacology 3 credit points
 - Physics and clinical measurements 2 credit points
 - Internal medicine 2 credit points
 - Basics of anesthesia 2 credit points
 - Elective courses 1 credit point
 - Scientific activities 3 credit points
 - Residency training program Part 1 48 credit points
- Second part: 1.5 years - Total credit points 90 - (Table 2)
 - Compulsory courses (30 weeks)
 - Anesthesia machine and equipment 1 credit point
 - General anesthesia 4 credit points
 - Specialized Anesthesia 8 credit points
 - Surgical ICU 2 credit points
 - Pain management 1 credit point
 - Scientific activities 4 credit points
 - Residency training program Part 2 70 credit points
- Master Thesis: completed during second part points. 20 credit points.



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Table 1: First part

Courses		Credit Points		ILOs
Code	Title	CPs	Total	
COMPULSORY COURSES				
<i>ANES 801</i>	Anatomy	1	13	A ₁ , A ₂ , B ₃ , C ₁ , C ₁₄ ,
<i>ANES 804</i>	Physiology	3		A ₃ , B ₆ .
<i>ANES 807</i>	Pharmacology	3		A ₄ , A ₅ , B ₇ ,
<i>ANES 823 PCM</i>	Physics and Clinical Measurements	2		A ₈ , B ₁₁ , C ₈ , C ₁₉
<i>ANES 811</i>	Internal Medicine	2		A ₆ , A ₇ , B ₁₂ , C ₂ , D ₁ , D ₂ , D ₃ , D ₁₃ .
<i>ANES 823 BA</i>	Basics of Anesthesia	2		A ₁₁ , A ₁₄ , B ₅ , B ₈ , B ₁₀ , C ₄ , C ₆ , C ₇ , C ₁₂ , C ₁₃ , C ₁₇ , C ₁₈ , D ₄ , D ₅ , D ₉ , D ₁₀ , D ₁₁ , D ₁₄ .
ELECTIVE COURSES (MEDC) choose 2 courses				
<i>MEDC 1</i>	Critical Reading	0.5	1	D ₄ , D ₆ , D ₇ , D ₈ , D ₁₂ .
<i>MEDC 2</i>	Scientific writing	0.5		
<i>MEDC 3</i>	Evidence-Based Medicine	0.5		
<i>MEDC 4</i>	Medical statistics II	0.5		
<i>MEDC 5</i>	Medical ethics	0.5		
<i>MEDC 6</i>	Communication Skills	0.5		
SCIENTIFIC ACTIVITIES				
<i>1st Part</i>	Scientific activities	3	3	D ₆ , D ₇ , D ₈ , D ₉ , D ₁₂ .
RESIDENCY TRAINING PROGRAM (Basic training)				
<i>ANES 823 CI</i>	Residency training program	48	48	B ₅ , B ₆ , B ₈ , B ₁₀ , B ₁₂ , C ₂ , C ₄ , C ₅ , C ₆ , C ₇ , C ₁₂ , C ₁₃ , C ₁₇ , C ₁₈ , D ₄ , D ₅ , D ₉ , D ₁₀ , D ₁₁ , D ₁₄ .



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Table 2: Second part

Courses		Credit Points		ILOs
		CPs	Total	
Code	Title			
COMPULSORY COURSES				
<i>ANES 823</i> Anesthesia, ICU and Pain Management				
<i>ANES 823</i> <i>Ta</i>	Anesthesia Equipment	1	16	A ₅ , A ₆ , A ₇ , A ₉ , A ₁₀ , A ₁₂ , A ₁₃ , B ₁ , B ₆ , B ₉ , C ₃ , C ₅ , C ₉ , C ₁₀ , C ₁₁ , C ₁₄ , C ₁₅ , C ₁₆ , C ₁₉ .
<i>ANES 823</i> <i>Tb</i>	General Anesthesia	4		
<i>ANES 823</i> <i>Tc</i>	Specialized Anesthesia	8		
<i>ANES 823</i> <i>Td</i>	Surgical I.C.U.	2		
<i>ANES 823</i> <i>Te</i>	Pain Management	1		
SCIENTIFIC ACTIVITIES				
^{2nd} Part	Scientific activities	4	4	D ₆ , D ₇ , D ₈ , D ₉ , D ₁₂ .
RESIDENCY TRAINING PROGRAM				
<i>ANES 823</i> <i>C2</i>	Residency training program	70	70	A ₆ , A ₇ , A ₁₁ , A ₁₄ , B ₁ , B ₂ , B ₃ , B ₄ , B ₅ , B ₆ , B ₇ , B ₈ , B ₉ , B ₁₀ , B ₁₁ , C ₁ , C ₂ , C ₃ , C ₄ , C ₅ , C ₆ , C ₇ , C ₈ , C ₉ , C ₁₀ , C ₁₁ , C ₁₂ , C ₁₃ , C ₁₄ , C ₁₅ , C ₁₆ , C ₁₇ , C ₁₈ , C ₁₉ , D ₁ , D ₂ , D ₃ , D ₄ , D ₅ , D ₆ , D ₇ , D ₁₀ , D ₁₁ , D ₁₃ , D ₁₄ .
MASTER THESIS				
	Master Thesis	20	20	C ₈ , C ₁₂ , C ₁₄ , D ₄ , D ₆ , D ₇ , D ₈ .



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Residency Training Program

- **First Phase (Basic Training):**

According to the Faculty of Medicine, Cairo University Bylaws for Post Graduate Programs, July 2009, modified in 2012, and the new academic and clinical training program approved by the Department of anesthesia, surgical ICU and pain management in April, 2016, all the students should have a basic training for 18 months. During this period the students will attend the basic theatres; General Surgery, Orthopedics, Urology, Head & Neck, Ear Nose and Throat, Obstetric /Gynecology, Ophthalmology and pediatrics. Trainees are required to attend the general compulsory courses and two of the elective courses.

- **Second Phase (Special Training):**

All students should complete the special part of the residency training program in the Anesthesia Department. They should spend 18 months in order to acquire the needed credit points. During this period the students will attend the compulsory course (s) of the second part and will participate in the scientific activities and training courses of the department. Candidates are required to attend anesthesia conferences, seminars thesis discussion.

Master Thesis

All master-degree students should prepare a thesis in Anesthesia, surgical ICU or Pain Management. The department and the ethical committees must approve the protocol of the research. The thesis includes a review part with a practical part. The thesis is supervised by one or more senior staff members and may include other specialties according to the nature of the research. The thesis should be evaluated and approved by a committee of three professors; one of the supervisors, an internal examiner, and an external examiner.

Scientific Activities:

The students should actively participate in the scientific activities of department such as:

- Journal club once every four weeks.
- Seminars (including recent topics and controversial issues) once monthly. Students are expected to participate in the discussions.
- Scientific meetings arranged by the department like morbidity and mortality meetings \, journal club and the scientific days every month.
- Attendance of thesis discussions



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Each activity is monitored and given credit points registered in a special section in the residency-training logbook. The student should collect the required points before allowed to sit for the final exam.

VI. Regulations for Progression and Program Completion

After collecting the required credit points for the respective courses, the first phase of the residency training, and the scientific activities, the student will be eligible to sit for the first part examination. In case the student fails to pass the examination, he/she may proceed in the clinical training and can resubmit for the next examination.

After passing the first part, the student submits a protocol for Master Thesis at the beginning of the second part. Before submitting to the final examination he/she should finish the thesis and get approval. Phase two of special training program should be completed to finish the required required credit points. The candidate will receive the Masters degree after passing the final examination successfully. Master degree should be obtained within a maximum of 6 years after registration date.

VII. Assessment

A: Assessment Tools

- **Supervision and Monitoring of Training Program**

According to the Faculty of Medicine, Cairo University Bylaws for Residency Training Programs, July 2009, modified in 2012, and the new academic and clinical training program approved by the Department of anesthesia, surgical ICU and pain management in April, 2016, professors and Assistant professors carry continuous assessment during the program. A residency-training program logbook will be kept for each student to document all his/her clinical, laboratory and/or operative/procedural activities as well as his/her participation in different scientific activities. The head of the department should allow the students to undergo the final examination when they complete their training program and collect the credit points needed.

- **Formal Assessment**

According the Faculty of Medicine, Cairo University Bylaws for Post Graduate July 2009, modified in 2012, and the new academic and clinical training program approved by the Department of anesthesia, surgical ICU and pain management in April, 2016, students should be assessed at the end of first part and of the second part.

1. First Part Final Exam:

- **Anatomy:** one-hour written exam + oral exam.
- **Physiology:** Two-hour written exam + oral exam.
- **Pharmacology:** Two-hour written exam +oral exam.
- **Physics and Measurements:** Two-hour written exam + oral exam.
- **Internal Medicine:** Three-hour written exam +oral exam + clinical exam.
- **Basics of Anesthesia:** One-hour written exam (including short essay and multiple choice questions) + oral exam + clinical exam.

2. Second Part Final Exam Part 2:



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- **Anesthesia:** Three written examinations including short essay questions, MCQ (including problem solving) + Key features exam + oral examination + clinical examination

B: Assessment Schedule:

1. First Part Final Exam:

The written exam will be held in April/October (four days):

- Day one: Anatomy and Physiology (3 hours)*
- Day two: Pharmacology (2 hours)*
- Day three: Physics and Measurements (2 hours)*
- Day four: Internal Medicine (3hours)*
- Day five: Basics of Anesthesia (1hour)*

This will be followed by the clinical and oral exams in separate days.

2. Second Part Final Exam:

The written exam will be held in May/ November (3 days):

A. *Day one: Short answered questions exam+ 60 MCQ (3hours):*

- *General surgery,*
- *Gynecology and obstetrics,*
- *Pediatrics,*
- *Orthopedics,*
- *ENT,*
- *Ophthalmology,*
- *Regional Anesthesia.*

B. *Day two: Short answered questions+ 60 MCQ*

- *Neurosurgery,*
- *Cardiac surgery.*
- *Pain and ICU,*
- *Coexisting diseases.*
- *Anesthesia for Geriatric.*

C. *Day three: Key features exam (1hour)*

This will be followed by the clinical and oral exams in separate days.

C: Weighing of Assessment (Marks allocated to courses):

(50 marks for each credit point)

Courses		Marks			
Code	Title	Written	Oral	Clinical	Total
FIRST PART					
ANES 801	Anatomy	30	20	---	50
ANES 804	Physiology	80	70	---	150
ANES 807	Pharmacology	100	50	---	150



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<i>ANES 823 PCM</i>	Physics/Clinical Measurements	60	40	---	100
<i>ANES 811</i>	Internal Medicine	60	20	20	100
<i>ANES 823 BA</i>	Basics of Anesthesia	60	20	20	100
Total First Part					650
SECOND PART					
<i>ANES 823 Ta</i>	Anesthesia Equipment	150	125	300	800
<i>ANES 823 Tb</i>	General Anesthesia				
<i>ANES 823 Tc</i>	Specialized Anesthesia				
<i>ANES 823 Td</i>	Surgical I.C.U.				
<i>ANES 823 Te</i>	Pain Management	75			
Total Second Part					800

Remarks

- It is mandatory to pass each paper of first part exams as follows:
 - a. Physiology + Anatomy papers collectively.
 - b. Pharmacology paper.
 - c. Internal medicine paper.
 - d. Physics and measurements paper.
 - e. Basics of anesthesia paper
- It is mandatory to pass all the three papers of the second part of the Anesthesia exam collectively.
- Passing mark in a written exam is 60%

VIII. Evaluation of Program Intended Learning Outcomes

Evaluator	Tool	Sample
1. Senior Students	Questionnaire at the end of the program	All the post graduate students
2. Alumni	The faculty is currently developing an Alumni office for postgraduates	Not yet determined
3. Stakeholders	A meeting will be arranged during annual conference of the department	Available representatives from: <ul style="list-style-type: none"> - Army hospitals - National medical insurance - Medical syndicate - Ministry of health
4. External Evaluators	Review program and courses Attending the final exam	Once before implementation Bi-annual report
5. College Quality Assurance committee	Annual program reviewer	

Chairman of Department of Anesthesia, Surgical ICU, Pain management



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Professor Ahmed Mounir Shash

Date: 10/12/2016