



# Medical Doctorate (M.D.) Degree Program and Courses Specifications for Cardiothoracic Surgery

(According to currently applied bylaws)

Cardiothoracic Surgery
department
Faculty of medicine
Assiut University
2021-2022/2022-2023

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#### M. D. degree of Cardiothoracic Surgery

#### A. Basic Information

- Program Title: Cardiothoracic Surgery
- Nature of the program: Single.
- Responsible Department: Cardiothoracic Surgery Department
- Program Academic Director (Head of the Department):

#### Prof. Ahmed Ghoneim

#### **Coordinator (s):**

- Principle coordinator: Prof. Ahmed El-Minshawy
  Assistant coordinator: Dr. Hussein Elkhayat
- ♣ Internal evaluators: Dr. Sameh Abdel-Rahman Mohamed Sayed
- External evaluator: Prof. Mouhamad Mamduh Eabdalruwf
  Alshaerawaa
- ♣ Date of Approval by the Faculty of Medicine Council of Assiut University: 24 -10- 2010
- **♣** Date of most recent approval of program specification by the Faculty of Medicine Council of Assiut University: 27 -11-2022
- Total number of courses: 4 courses

#### **B.** Professional Information

#### 1- Program aims

- 1/1 To enable candidates master high level of clinical skills, bedside care skills, in addition to update medical knowledge as well as surgical experience and competence in the area of Thoracic Diseases, Congenital Heart Disease, Acquired Heart Disease, Thoracic Trauma and enabling the candidates of making appropriate referrals to a sub-specialist
- 1/2 Provide candidate with fundamental knowledge and skills of Extracorporeal Bypass as regards; mastering dealing with Extracorporeal circuits, equipments, and training skills of different techniques.
- 1/3 To enable candidates to perform high standard scientific medical research and how to proceed with publication in indexed medical journals.
- 1/4 To enable candidates to describe the basic ethical and medicolegal principles relevant to cardiothoracic surgery
- 1/5 To enable candidates to have professional careers as a consultant in Egypt but recognized abroad.
- 1/6To enable candidates to continue self learning in subspecialties.
- 1/7 To enable candidates to master different research methodology and do their own.

# 2-Intended learning outcomes (ILOs) for the whole program:

#### 2/1Knowledge and understanding:

- A. Demonstrate in-depth knowledge and understanding of theories, basics and updated biomedical, clinical epidemiological and socio behavioral science relevant to Cardiothoracic Surgery as well as the evidence based application of this knowledge to patient care.
- B. Explain basics, methodology, tools and ethics of scientific medical, clinical research.
- C. Mention ethical, medico logical principles and bylaws relevant to his practice in the field of Cardiothoracic Surgery
- D. Mention principles and basics measurements of quality assurance and quality improvement in medical education and in clinical practice of Cardiothoracic Surgery
- E. Mention health care system, public health and health policy, issues relevant to this Cardiothoracic Surgery and principles and methods of system based improvement of patient care in common health problems of the field of Cardiothoracic Surgery

#### 2/2 Intellectual outcomes

- A. Apply the basic and clinically supportive sciences which are appropriate to the Cardiothoracic Surgery related conditions / problem / topics.
- B. Demonstrate an investigatory and analytic thinking "problem
   solving "approaches to clinical situation related to Cardiothoracic Surgery.
- C. Plan research projects.
- D. Write scientific papers.
- E. Participate in clinical risk management as a part of clinical governance.

- F. Plan for quality improvement in the field of medical education and clinical practice in his practice.
- G. Create / innovate plans, systems, and other issues for improvement of performance in his practice.
- H. Present and defend his / her data in front of a panel of experts.
- Formulate management plans and alternative decisions in different situations in the field of

#### 2/3 Skills

#### 2/3/1 Practical skills (Patient Care)

#### Students will be able to:

- A. Provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. *p.s.* Extensive level means in-depth understanding from basic science to evidence based clinical application and possession of skills to manage independently all problems in field of practice.
- B. Provide extensive level of patient care *for patients with all common diagnoses and for uncomplicated procedures* related to Cardiothoracic Surgery.
- C. Provide extensive level of patient care *for non-routine, complicated patients and under increasingly difficult circumstances*, while demonstrating compassionate, appropriate and effective care.
- D. Perform diagnostic and therapeutic procedures considered essential in the field of Cardiothoracic Surgery

- E. Handles unexpected complications, while demonstrating compassion and sensitivity to patient needs and concerns.
- F. Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families in the Cardiothoracic Surgery related situations.
- G, Gather essential and accurate information about patients of the Cardiothoracic Surgery related conditions.
- H. Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, upto-date scientific evidence and clinical judgment for the Cardiothoracic Surgery related conditions.
- I. Develop and carry out patient management plans for Cardiothoracic Surgery related conditions.
- J. Counsel and educate patients and their families about Cardiothoracic Surgery related conditions.
- K. Use information technology to support patient care decisions and patient education in all Cardiothoracic Surgery related clinical situations.
- L. Perform competently all medical and invasive procedures considered essential for the Cardiothoracic Surgery related conditions / area of practices.
- M. Provide health care services aimed at preventing the Cardiothoracic Surgery related health problems.
- N. Lead health care professionals, including those from other disciplines, to provide patient-focused care in Cardiothoracic Surgery related conditions.

O. Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets. (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)

#### 2/3/2 General skills

#### **Including:**

- Practice-based Learning and Improvement
- Interpersonal and Communication Skills
- Professionalism
- Systems-based Practice

#### **Practice-Based Learning and Improvement**

- A. Demonstrate the competency of continuous evaluation of different types of care provisio to patients in the different area of Cardiothoracic Surgery
- B. Appraise scientific evidence.
- C. Continuously improve patient care based on constant selfevaluation and <u>life-long learning</u>.
- D. Participate in clinical audit and research projects.
- E. Practice skills of evidence-based Medicine (EBM).
- F. Educate and evaluate students, residents and other health professionals.
- G. Design logbooks.
- H. Design clinical guidelines and standard protocols of management.
- I.Appraise evidence from scientific studies related to the patients' health problems.

- J. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies.
- K. Use information technology to manage information, access on-line medical information; for the important topics.

#### **Interpersonal and Communication Skills**

- L. Master interpersonal and communication skills that result in the effective <u>exchange of information and collaboration</u> with patients, their families, and health professionals, including:-
  - Present a case.
  - Write a consultation note.
  - <u>Inform patients</u> of a diagnosis and therapeutic plan completing and maintaining comprehensive.
  - Timely and legible medical records.
  - Teamwork skills.
- M. Create and sustain a therapeutic and ethically sound relationship with patients.
- N. Elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.
- O. Work effectively with others as a member or leader of a health care team or other professional group.

#### **Professionalism**

- P. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.
- Q. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.

R. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.

#### **Systems-Based Practice**

- S. Work effectively in health care delivery settings and related Cardiothoracic systems to Surgery good administrative and time management.
- T. Practice cost-effective health care and resource allocation that does not compromise quality of care.
- U. Advocate for quality patient care and assist patients in dealing with system complexities.
- V Design, monitor and evaluate specification of under and post graduate course and programs.
- W. Act as a chair man for scientific meetings including time management.

#### 3- Program Academic Reference Standards (ARS) (Annex 2)

# Academic standards for Medical Doctorate (MD) degree in Cardiothoracic Surgery

Assiut Faculty of Medicine developed MD degree programs' academic standards for different clinical specialties.

In preparing these standards, the General Academic Reference Standards for post graduate programs (GARS) were adopted. These standards sit out the graduate attributes and academic characteristics that are expected to be achieved by the end of the program.

These standards were approved by the faculty council on 3/2010. These standards were revised and approved without changes by the Faculty Council on 23-9-2014.

These standards were re- revised and approved without changes by the Faculty Council on 27-11-2022.

#### 4- Program External References (Benchmarks)

1. ACGME (Accreditation Council for Graduate Medical Education).

http://www.acgme.org/acWebsite/navPages/nav Public.asp

2. TSDA (Thoracic Director's **Association** Surgery **Comprehensive Cardiothoracic Curriculum)** 

http://www.tsda.org/

Comparison between program and external reference			
Item	Cardiothoracic	ACGME (Accreditation	
	Surgery	<b>Council for Graduate</b>	
		Medical Education) for	
		thoracic surgery	
		Effective: January	
		1,2008	
Goals	Matched	Matched	
ILOS	Matched	Matched	
Duration	4 years	Different (3 format;2	
		years,4+3 and 6 years	
		program)	
Requirement	Different	Different	
Program	Different	Different	
structure			

# 5- Program Structure

A. Duration of program: 4 years

B. Structure of the program:

**Total number of contact hours 4251** 

Didactic 500 (11.7%), practical 3751 (88.3%),total 4251

First part

Didactic 80 (54.8%), practical 66 (45.2%), total 146

Second part

Didactic 420 (10.2%) ,practical 3685 (89.8%), total 4105

#### According the currently applied bylaws:

Compulsory courses: 100%

Optional courses: N/A Elective courses: N/A

	Contact hours	% from total
Basic courses	146	3.43
Humanity and social courses	0	0
Specialized courses	4105	96.57
Others ( Computer,)	0	0
Field training	3685	86.68

#### **Program Time Table**

Duration of program 4 years divided into

o Part 1

Program-related essential courses

- Medical statistics and computer
- Research Methods
- Medical reports and medical ethics

Students are allowed to sit the exams of these courses after 6 months from applying to the M D degree.

o Part 2

Minimum 2 years

Program –related academic and specialized science courses and ILOs

Students are not allowed to sit the exams of these courses before 2 years from passing the examination of the first part.

#### o Part 3

Thesis and at least one published research from the thesis For the M D thesis;

MD thesis subject should be officially registered maximally one and half years from applying to the MD degree,

Discussion and acceptance of the thesis should not be set before 24 months from registering the M D subject and maximally after 4 years;

It could be discussed and accepted either before or after passing the second part of examination)

Students have to pass the final written exams to be eligible to sit the oral and clinical exams.

If the student fails to pass the clinical and oral exams for 4 times, he has to repeat the final written exam again.

Final written exams degrees and the case solving are all added together.

The students pass if they get 60% from the summative written exams and 60% from oral and clinical exams.

Total degrees 1000 marks.

Written exam 40% (400 marks).

Clinical and oral exams 60% (600 marks)

# **Curriculum Structure: (Courses):**

**↓**Levels and courses of the program:

Modules/ Units delivering courses and	Course	Course Contact hours		
student work load list	Code	Didactic#	training	total
First Part				
<b>Essential Courses</b>				
1) Course 1: Medical statistics and computer	FAC309A	40	40	80
2) Course 2: Research Methods	FAC309B	30	18	48
3) Course 3: Medical reports and	FAC310C	10	8	18
medical ethics				
Second Part	S	pecialized o	courses	
	Specialize	ed Clinical V	Vork (log E	Book)
Specialized Courses				
Course 4 Cardiothoracic surgery	CTS312A	420	3685	4105
• Unit (Module )1 Thoracic Diseases		100	975	1075
Unit (Module )2 Acquired Heart		100	975	1075
Disease				
<ul> <li>Unit (Module )3 Congenital Heart Disease</li> </ul>		100	975	1075
Unit (Module )4 Thoracic Trauma		30	380	410
Unit (Module )5 Extracorporeal		15	190	205
Bypass				
Unit (Module )6 Minor Procedures		15	190	205
• Unit (Module )7 Applied Surgical				
Cardiothoracic Anatomy		30		30
<ul> <li>Unit (Module )8 Applied Surgical Cardiothoracic Pathology</li> </ul>		30		30
Third Part				
Thesis and at least one published				
research				

# 6. Courses Contents (Annex 1)

The competency based objectives for each course/module/rotation are specified in conjunction with teaching/training methods, requirements for achieving these objectives and assessment methods.

See Annex 1 for detailed specifications for each course/ module **Annex 6 II: Program Matrix** 

#### 7-Admission requirements



#### Admission Requirements (prerequisites) :

- Candidates graduated from Egyptian Universities should have at least grade good in their final year examination, and grade good in the General surgery course.
- Candidates should have at least grade good in their final of Master degree of General Surgery
- Candidate should be fluent in English (Study Language)

#### **VACATIONS AND STUDY LEAVE**

The current departmental policy is to give working candidate 3 week leave prior to first/ second part exams.

#### **FEES:**

As regulated by the postgraduate studies rules and approved by the faculty vice dean of post graduate studies and the faculty and university councils.

# 8-Progression and completion requirements

- **Lesson** Examinations of the first part could be set at 6 months from registering to the MD degree.
- Discussion of the MD thesis could be set after 2 years from officially registering the MD subject, after setting the second part exams.

♣ The maximum duration of the program is 4 years could extend to 5 in certain conditions.

The students are offered the degree when:

- 1. Passing the exams of all essential and specialized courses of this program as regulated by the post graduates approved rules by the faculty council.
- 2. Discussion and acceptance of the MD thesis and publication of at least one scientific paper from the thesis in preferably specialized medical journals.

# 9-Program assessment methods and rules (Annex IV)

Method	ILOs measured
Written examinations:	K & I
Structured essay questions	
Objective questions	
MCQ	
Problem solving	
Clinical:	K ,I, P &G skills
Long/short cases	
OSCE	
Structured oral	K ,I &G skills
Logbook assessment	All
Research assignment	I &G skills

## Weighting of assessments:

Weighting	g or assess	ments.				-
Courses Degrees						
First Part	Course	Written Oral and/or		Total		
	code	Exam	Practical / Cli	nical Exam		
Essential Courses:						
Medical statistics	FAC309A	80	20			100
and computer						
Research	FAC309B	80	20			100
Methods						
Medical reports	FAC310C	70	30			100
and medical ethics						
		230	70			300
		Seco	nd Part			
	Course	Written	Oral	Practical	Clinical	Total
	code					
Specialized Courses			Radiology &	Operative =	300	785
Course 4	CTS312A		instruments	50	Long	
Cardiothoracic			=100		150	
surgery Unit (1-6)					Short 75	
Paper 1		115	Operative		Short 75	
Paper 2		115	=50			
Commentary		55				
Unit (Module )7		115		50		215
Applied Surgical						
Cardiothoracic						
Anatomy						
Unit (Module) 8						
Applied Surgical			50			
Cardiothoracic						
Pathology						
Total		400	200	100	300	1000

# **Cardiothoracic surgery**

Units' Titles' list	%	from	total
	Ma	rks	
Unit (Module )1 Thoracic Diseases		20	
Unit (Module )2 Acquired Heart Disease		20	
Unit (Module )3 Congenital Heart Disease		20	
Unit (Module )4 Thoracic Trauma		10	
Unit (Module )5 Extracorporeal Bypass		4	
Unit (Module )6 Minor Procedures		3.5	
Unit (Module )7 Applied Surgical Cardiothoracic Anatomy		} 21.5	5
Unit (Module) 8 Applied Surgical Cardiothoracic			
Pathology			
Total: 8 Units		100%	,

# 10-Program evaluation

By whom	Method	sample
Quality Assurance	Reports	#
Unit	Field visits	
External Evaluator	Reports	#
(s):According to	Field visits	
department		
council		
External Examiner		
(s): According to		
department		
council		
Stakeholders	Reports	#
	Field visits	
	Questionnaires	
Senior students	Questionnaires	#
Alumni	Questionnaires	#

#Annex 5 contains evaluation templates and reports (Joined in the departmental folder).

#### 11-Declaration

We certify that all of the information required to deliver this program is contained in the above specification and will be implemented.

All course specifications for this program are in place.

Contributor	Name	Signature	Date
Program Principle	Prof. Ahmed El Minshawy		
Coordinator:			
Head of cardiothoracic surgery Department (Program Academic Director):	Prof. Ahmed Ghoneim		

# Annex 1, Specifications for Courses / Modules

#### **Annex 1: specifications for courses**

#### **First Part**

- 1) Course 1: Medical statistics and Computer
- 2) Course 2: Research Methods
- 3) Course 3: Medical reports and medical ethics

#### **Course 1: Medical statistics**

Name of department: Public Health and Community Medicine

Faculty of medicine
Assiut University
2022-2023

#### 1. Course data

- Course Title: Medical statistics
- Course code: FAC309A
- Specialty: offered to all clinical and academic specialties
- Number of credit points: 1 credit point
- **Department (s) delivering the course:** Pubic Health and Community Medicine
- Coordinator (s):
  - Course coordinator: Prof. Farag Mohammed Moftah
  - Assistant coordinator (s):

Prof. Medhat Araby Khalil Saleh

- Date last reviewed: January -2022
- Requirements (pre-requisites) if any:
  - Completed Master degree in any of the academic or clinical departments of Medicine.

### 2. Course Aims

Enable gradute students to use statistical principles to improve their professional work and develop the concept of critical interpretation of data

3. Intended learning outcomes (ILOs):To be able to use statistical principals to manage data

# A knowledge and understanding

ILOS	Methods of	Methods of
	teaching/	Evaluation
	learning	
A. List the types of variables	Lecture and	Written
, ,	discussion	examination
B. Identify the methods of data collection	Lecture and	Written
,	discussion	examination
C. Describe the different sampling	Lecture and	Written
strategies	discussion	examination
D. Identify types of tabular and graphic	Lecture and	Written
presentation of data	discussion	examination
E. Identify measures of central tendency	Lecture and	Written
and dispersion	discussion	examination
F. Identify the characters of normal	Lecture and	Written
distribution curve.	discussion	examination
G. Detect the difference between	Lecture and	Written
parametric and non-parametric tests	discussion	examination
H. Identify the concepts of correlation and	Lecture and	Written
regression	discussion	examination

# **B.** intellectual

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Describe the normal curves.	Lecture& Discussions	Written examination
B. Describe and summarize data	Lecture& Discussions	Written examination
C. Select the proper test of significance	Lecture& Discussions	Written examination
D. Interpret the proper test of significance	Lecture& Discussions	Written examination
E. Describe the difference between parametric and non-parametric tests	Lecture& Discussions	Written examination

# C. Practical skills

ILOs	Methods of teaching/	Methods of Evaluation
	learning	Evaluation
A. Design data entry files.	Tutorial on	Assignments
7. Design data entry mes.	SPSS	SPSS exam
B. Validate data entry.	Tutorial on	Assignments
Di vandate data entry.	SPSS	SPSS exam
C. Manage data files.	Tutorial on	Assignments
c. Manage data mes.	SPSS	SPSS exam
D. Construct tables and graphs.	Tutorial on	Assignments
D. Construct tables and graphs.	SPSS	SPSS exam
E. Calculate measures of central	Tutorial on	Assignments
tendency and dispersion.	SPSS	SPSS exam
F. Select, apply and interpret the	Tutorial on	Assignments
proper test of significance.	SPSS	SPSS exam

# D general skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Appraise scientific evidence	Discussions	Research assignment
B. Use information technology to manage information, access online medical information; for the important topics.	tutorial	Research and audits' assignment

# 4. Course contents (topic s/modules/rotation Course Matrix

**Time Schedule: First Part** 

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skills	General Skills
	A	В	C	D
Introduction	A-F	A-D	-	A&B
Tables and graphics	D	A-D	-	A&B
Sampling	С	-	-	A&B
Methodology of data collection	В	-	-	A&B
Type of variables	A	-	-	A&B
Proportion test& Chi-square test	E,F	C&D	-	A&B
Student T test& Paired T test	E,F	C&D	F	A&B
ANOVA test	E,F	C&D	F	A&B
Non parametric tests	E,F	C&D	F	A&B
Discrimination analysis factor analysis	E,F	C&D	-	A&B
SPSS Introduction	A-F	A-D	-	A&B
Data entry and cleaning of data	A	A-D	A-C	A&B
Transforming of variables	A	A&B	A-C	A&B
Descriptive statistics	D	A-D	D&E	A&B
Graphic presentation	D	A&B	D	A&B
Chi square and interpretation of results	E,F	C&D	F	A&B
Correlation Regression	E,F	C&D	F	A&B
Multiple and logistic Regression	E,F	C&D	F	A&B

# 5. Course Methods of teaching/learning

- 1. Lectures
- 2. Assignments
- 3. Discussions
- 4. Exercises
- 5. Tutorial on SPSS v.16

#### 6. Course assessment methods:

#### i. Assessment tools:

- 1. Attendance and active participation
- 2. Assignment
- 3. Practical SPSS examination
- 4. Written exam
- **ii. Time schedule:** After 6 months from applying to the M D degree.
- iii. Marks: 50 (35 for written exam and 15 for practical exam).

#### 7. List of references

#### i. Lectures notes

Department lecture notes

#### ii. Essential books

- Medical Statistics: Book by Ramakrishna HK 2016
  - Janet Peacock and Philip Peacock. Oxford Handbook of Medical Statistics (second edition.) Publisher: Oxford University Press, Print Publication Date: Nov 2010 Print ISBN-13: 9780199551286, Published online: Jun 2011. DOI: 10.1093/med/9780199551286.001.0001
  - Leslie E. Daly MSc, PhD, Hon MFPHM,, Geoffrey J. Bourke MA, MD, FRCPI, FFPHM, FFPHMI, Interpretation and Uses of Medical Statistics, Fifth Edition, First published:1 January 2000, Print ISBN:9780632047635 |Online ISBN:9780470696750 |DOI:10.1002/9780470696750
  - Marcello Pagano, Kimberlee Gauvreau: Principles of Biostatistics second edition published in 2000 by Brooks/Cole and then Cengage Learning. CRC Press, Feb 19, 2018 Mathematics 584 pages.

#### **Iii- Recommended books**

- Ji-Qian Fang (Sun Yat-Sen University, China) Handbook of Medical Statistics: <a href="https://doi.org/10.1142/10259">https://doi.org/10.1142/10259</a> | September 2017.Pages: 852
- Robert H. Riffenburgh: Statistics in Medicine 4th Edition (2020). EvidenceEvidence Based Medicine How to practice and teach EBM.
- Discovering Statistics Using IBM SPSS Book by Andy Field, 2013.

#### iii. Periodicals, Web sites, etc

- iv. Periodicals, etc Statistics in Medicine Wiley Online Library
- v. **Web sites** https://www.phc.ox.ac.uk/research/medical-statistics

#### 8. Signatures

Course Coordinator:	Head of the Department:
<ul> <li>Farag Mohammed Moftah</li> </ul>	- Prof. Eman Morsy
	Mohamed
Date: 10-1-2022	Date: 10-1-2022
Associated Coordinator:	
Prof. Medhat Araby Khalil Saleh	
<b>Date</b> : 10-1-2022	

# **Course 2: Research Methodology**

Name of department: Public Health and Community Medicine
Faculty of medicine
Assiut University
2021-2022

#### 1. Course data

- Course Title: Research methodology
- Course code: FAC309B
- Specialty: Offered to all clinical and academic specialties
- Number of credit points: 1 credit point
- Department (s) delivering the course: Department of public health
- Coordinator (s):
  - Course coordinator: Prof. Mahmoud Attia

Assistant coordinator (s): Prof. Ekram Mohamed

- Prof. Medhat Araby Khalil
- **♣ Date last reviewed:** January 2022
- Requirements (prerequisites) if any:
  - Completed Master degree in any of the academic or clinical departments of Medicine.

# 2. Course Aims

To provide graduate students with the skills of:

- planning and implementing sound research
- writing a scientific research proposal

# 3. Intended learning outcomes (ILOs)

# A knowledge and understanding

ILOs	Methods of teaching/ learning	Methods of Evaluation	
A. Explain differences between different	Lecture and	Written exam	
study designs.	discussion	Log book	
	Practical sessions	assignments	
	Workshops	Practical exam	
B. Identify sources and types of bias in	Lecture and	Written exam	
research.	discussion	Log book	
	Practical sessions	assignments	
		Practical exam	
C. Identify methods of data collection.	Lecture and	Written exam	
	discussion	Log book	
	Practical sessions	assignments	
D. Select and design valid measurement	Lecture and	Written exam	
tools for research.	discussion	Log book	
	Practical sessions	assignments	
	Workshops	Practical exam	
E. Explain ethical issues in conducting	Lecture and	Written exam	
research on human subjects.	discussion	Log book	
	Practical sessions	assignments	
	Workshops		
F. List the steps involved in proposal	Lecture and	Written exam	
writing.	discussion	Log book	
	Practical sessions	assignments	
	Workshops	Practical exam	
G. Identify a research problem within a	Lecture	Written exam	
G. Identity a research problem within a	Discussion	Log book	

		,
conceptual framework.		assignments
		Practical exam
H. Use the web sources to do a literature	Practical tutorial on	Log book
search	web	assignment
I. Describe the rules of authorship in	Lecture and	Written exam
scientific writing.	discussion	Log book
	Practical sessions	assignments
	Workshops	
J. Select the appropriate study design for	Lecture	Written exam
the research question.	Practical sessions	Practical exam
K. Minimize bias in designing research.	Lecture	Written exam
L. Screening & theoretical background	Lectures	Written exam
L. Screening & incorcuear background		Practical exam
M. Mention the basic ethics for conducting a	lectures	Written exam
research and medicolegal principles relevant	seminar	Practical
to data confidentiality.		exam

# **B.** intellectual

Competency and Skills	Methods of	Methods of
	teaching/	Evaluation
	learning	
A-Apply basic science & knowledge for	Discussions	Written exam
appraising scientific literature.	&seminars	Practical exam
B- Design research and present study data,	lecture	log book
in seminars.	seminar	assignments
C- Design suitable epidemiological study.	lecture	log book
	seminar	assignments
D-Design strategies for resolving ethical	lecture	Written exam
concerns in research, law, and regulations.	Workshops	log book
		assignments
E- Apply coherently synthesize ideas and	lecture	log book
integrate lateral and vertical thinking.	Workshops	assignments
F- Evaluate screening tests and interpreting	lecture	Written exam
their uses in different population.		Practical exam

# C. Practical skills

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A- Conduct epidemiological studies, screening and surveys.	lectures seminar	written exam log book
and surveys.	Schillai	assignments
B- Identify steps required in fielding the study.	Lecture	Assignments Written exam
C- Managing data collection team.	lectures seminar	log book assignments
D- Identify steps required for calculation	Lecture	Assignments
sensitivity, specificity, positive predictive	Practical	Written exam
value, negative predictive value, accuracy of a screening test.	sessions	Practical exam
E- Be able to define and apply the	Lecture	Assignments
epidemiologic criteria of causality and be	Practical	Written exam
able to distinguish between a measure of association and evidence of causality.	sessions	Practical exam
F- Synthesize information from multiple	Lecture	Assignments
sources for research writing and the ability	Practical	Written exam
to perform paper critique.	sessions	Practical exam
G- Identify bias and confounding in	Lecture	Assignments
epidemiological study designs, their types	Practical	Written exam
and ways to control them in various types of biases.	sessions	Practical exam

#### D General skills

**Practice-Based Learning and Improvement** 

ILOs	Methods of Methods		
	teaching/ learning	Evaluation	
A- Scientific paper and proposal writing skills: be able to write an introduction, objectives and the methodological section.	Tutorial	Written examination	
B- Learn authorship ethical rules.	Tutorial	Written examination	
C- Perform practice-based improvement activities using a systematic methodology (audit, logbook, critical appraisal)	<ul><li>Lectures</li><li>-Practical sessions</li><li>- Discussion</li><li>- Readings</li></ul>	critical appraisal	
D- Appraise evidence from scientific studies(journal club)	<ul><li>Lectures</li><li>-Practical sessions</li><li>- Discussion</li><li>- Readings</li></ul>	critical appraisal	
E- Conduct epidemiological studies, screening and surveys.	- Lectures -Practical sessions - Discussion - Readings	attendance and participation	
F- Facilitate training of junior students and other health care professionals in different screening activities.	Field work Participation in projects	attendance and participation	

**Interpersonal and Communication Skills** 

interpersonal and Communication Skins			
ILOs	Methods of teaching/	Methods of	
	learning	Evaluation	
G- Maintain ethically sound relationship with	- Lectures	Written	
community members.	-Practical sessions	exams	
	- Discussion		
	- Readings		
H- Provide information using effective nonverbal,	- Lectures	Written	
explanatory, questioning, and writing skills.	-Practical sessions	exams	
	- Discussion	Practical	
	- Readings	exams	
I- Present results of researches in seminars.	- Lectures	Log book	
	-Practical sessions	assignments	
	- Discussion		
	- Readings		

# Professionalism

ILOs	Methods of teaching/	Methods of Evaluation
	learning	
J- Demonstrate respect, compassion, and integrity to the	- Lectures	Written
needs of society.	- Discussion	exams
	- Readings	
K- Manage potential conflicts of interest encountered by	- Lectures	Written
practitioners, researchers, and organizations.	- Discussion	exams
	- Readings	_
L- Design strategies for resolving ethical concerns in		Written
research, law, and regulations.	- Discussion	exams
	- Readings	Practical
		exams
M- Demonstrate ways to control for confounding in the	Lectures	Written
analysis phase of a study	- Discussion	exams
	- Readings	Practical
		exams
N- Demonstrate a commitment to ethical principles	Lectures	Written
including confidentiality of participants' information	- Discussion	exams
and informed consent.	- Readings	
O- Assess ethical considerations in developing	- Lectures	Written
communications and promotional initiatives.	- Discussion	exams
	- Readings	

# 4. Course contents (topic s/modules/rotation Course Matrix

**Time Schedule: First Part** 

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical	General
			skills	Skills
	$\mathbf{A}$	В	C	D
Over view on research	A&E	A-D	A-C	C-G,
conduction and research				I,L&M-O
ethics				
How to write a research	F,I	Е	F	A-C&H
proposal				
Observational study design	A& D	B & C	D	E & F
Experimental study design	A& D	B & C	В	E & F
Evaluation of diagnostic tests	L	A	B& E	F
(Screening)				
Systematic reviews and meta	G, H & M	E& F	F	C, D
analysis				
Confounding, bias & effect	B & K	D	E & G	M
modification				

# 5. Course Methods of teaching/learning:

- 1. Lectures
- 2. Assignments
- 3. Discussion
- 4. Exercises

# 6. Course assessment methods:

#### i. Assessment tools:

- 1. Attendance and participation
- 2. Log book assignments
- 3. Written examination
- 4. Practical examination

**ii. Time schedule:** After 6 months from applying to the M D degree.

iii. Marks: 50 (35 for written exam and 15 for practical exam).

#### 7. List of references

#### i. Lectures notes

Department lecture notes

#### ii. Essential books

- Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition by John W. CreswellSAGE Publications, Inc; 4th edition (January 1, 2014)
- Research methodology: A step by step Guide for Beginners.
   Ranjit Kumar, 2020. Second edition <a href="https://books.google.com.eg/books">https://books.google.com.eg/books</a>?
- Medical Research Essentials Rania Esteitie, McGraw Hill Professional, third edition, Feb 5, 2014 - Medical - 104 pages
- Research Methodology in the Medical and Biological Sciences Petter Laake, Haakon Breien Benestad, Bjorn R. Reino Olsen, 4th edition, Academic Press, Nov 5, 2007 - Science - 512 pages

#### iv. Recommended books

- Research Methods in Education 7th Edition, by Louis Cohen, Lawrence Manion, Keith Morrison Publisher: Routledge; (April 22, 2011) www.routledge.com/textbooks/cohen7e.
- Research Methodology: A Practical and Scientific Approach Vinayak Bairagi, Mousami V. Munot · 2019, Research Methodology: A Practical and Scientific Approach - Google Books
- Based Medicine How to practice and teach EBM. David Sachett, Sharon E. Straus, W. Scott Richardson, William Rosenberg R.Brain Haynes
- Dissertation workshop open courseware JHSPH

## 8. Signatures

Course Coordinator:	Head of the Department:
Prof.Mahmoud Attia	Prof. Eman Morsy Mohamed
Date: 10-1-2022	Date: 10-1-2022

# Course 3: Medico legal Aspects and Ethics in Medical Practice and Scientific Research

Name of department:
Forensic medicine and clinical toxicology
Faculty of medicine
Assiut University
2016-2017

#### 1. Course data

- ♣ Course Title: Medicolegal Aspects and Ethics in Medical Practice and Scientific Research
- Course code: FAC310C
- Speciality:General and special surgery (1st part),
- **♣** Number of credit points: 1 credit point
- ♣ Department (s) delivering the course: Forensic Medicine and Clinical Toxicology
- Coordinator (s):
- Course coordinator:

Prof. Ghada omran

- **Date last reviewed:** September 2017
- Requirements (prerequisites) if any :
  - Completed Master degree

### 2. Course Aims

To describe the basic ethical and medicolegal principles and bylaws relevant to practice in the field of General and special surgery Rheumatology

# 3. Intended learning outcomes (ILOs):

# A. knowledge and understanding

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Mention principals of writing consent forms.	Lecture and discussion	Written & oral exam
B. Mention principals of Writing a death certificate	Lecture and discussion	Written & oral exam
C. Explain principals of medical reports.	Lecture and discussion	Written & oral exam
D. Mention principals of Dealing with wounds.	Lecture and discussion	Written & oral exam
E. Mention principals of firearm injuries.	Lecture and discussion	Written & oral exam
F. List indications of induced emesis, gastric lavage and samples collection.	Lecture and discussion	Written & oral exam

### **B.** Intellectual

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Design and present case, seminars in death certificate	Lecture and discussion	Written & oral exam
B. Design and present case, seminars in toxicological cases	Lecture and discussion	Written & oral exam

## C. Practical skills

Competency and Skills	•	
A. Identify medical ethics and ethics in research.	Lecture and discussion	Discussion
B. Prepare and write consent.	Lecture and discussion	Discussion
C. Identify medical responsibilities.	Lecture and discussion	Discussion
D. Write death certificate.	Lecture and discussion	Discussion and active participation
E. Deal with a case of Suspicious death	Lecture and discussion	Discussion and active participation
F. Write medical reports	Lecture and discussion	Discussion and active participation
G. Identify types of wounds and deal with them.	Lecture and discussion	Discussion and active

	•	
		participation
H. Identify types, distance and direction of firearm wounds and deal with them	Lecture and discussion	Discussion and active participation
I. Elicit death associated with surgical anesthesia.	Lecture and discussion	Discussion and active participation
J. Perform gastric lavage, induce emesis, and obtain samples	Lecture and discussion	Discussion and active participation

### **D. General Skills**

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Present a case.	Lecture and discussion	Global rating logbook
B. Write a consultation note	Lecture and discussion	Global rating logbook
<ul><li>C. Inform patients and maintaining comprehensive.</li></ul>	Lecture and discussion	Global rating logbook
D. Make timely and legible medical records	Lecture and discussion	Global rating logbook
E. Acquire the teamwork skills	Lecture and discussion	Global rating logbook

# 4. Course contents (topic s/modules/rotation Course Matrix

**Time Schedule: First Part** 

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skills	General Skills
	A	В	C	D
<ol> <li>Death and death certificate.</li> </ol>	В	А	D	
2. Suspicious death	В		E	В
3. Death associated with	В		I	В
surgical anesthesia				
4. Medical reports	С	В	F	A,D,E
<ol><li>Toxicological Reports</li></ol>	F	В	J	A,E
6. Wounds	D		G	В
7. Firearm injuries	E		Н	В
8. Ethics in research			Α	
9. Medical ethics.	Α		A,B,C	C,E

# **5. Course Methods of teaching/learning:**

- 1. Lectures.
- 2. Discussions.
- 3. Exercises.

#### 6. Course assessment methods:

#### i. Assessment tools:

- 1. Written examination.
- 2. Attendance and active participation.
- 3. Oral examination.
- **ii. Time schedule:** After 6 months from applying to the M D degree.
- iii. Marks: 50 (35for written exam and 15 for oral exam).

#### 7. List of references

#### i. Lectures notes

- Course notes.
- Staff members print out of lectures and/or CD copies.

#### ii. Essential books

- Bernard Knight and Pekka Saukko (2015: Knight Forensic Pathology. Hodder Arnold press
- Goldfrank, Lewis R.; Howland, Mary Ann; Hoffman, Robert S.; Nelson, Ewis S.; Lewin, Neal A (2019): Goldfrank's Toxicologic Emergencies, 11<sup>th</sup> ed. McGraw Hill / Medical.
  - Medical Ethics Manual. World medical association. Third edition 2015.
    - Medical ethics and law. <u>Dominic Wilkinson</u>, 3<sup>rd</sup>edition 2019.

#### iii. Recommended books

• Biswas Gautam (2021): Review of Forensic Medicine & Toxicology. 5<sup>th</sup> ed. Jaypee Brothers Medical Pub.

#### iv. Journal and web site

- Journals of all Egyptian Universities of Forensic Medicine and Clinical Toxicology.
- All International Journals of Forensic Medicine and Clinical Toxicology which available in the university network at www.sciencedirect.com. As:
  - Forensic Science International Journal.
  - Toxicology Letter.

#### v. others

### 8. Signatures

- Course Coordinator:	- Head of the Department:
<b>Prof.</b> Prof. Ghada omran	<b>Prof.</b> Randa Hussein Abdelhady
Date: September 2017	Date: September 2017

# **Second Part**

#### **Course 4 Cardiothoracic Surgery**

Name of department: Cardiothoracic Surgery

Faculty of medicine
Assiut University
2022-2023

### 1. Course data

- Course Title: Cardiothoracic surgery
- Course code: CTS312A
- Specialty Cardiothoracic surgery
- Number of hours: 4105 hours didactic 420hours (10.2%) practical 3685 hours (89.8%)
- Department (s) delivering the course: Department of cardiothoracic surgery - Faculty of Medicine- Assiut- EGYPT
- Coordinator (s):
  - Principle coordinator: Prof. Ahmed El-Minshawy
  - Assistant coordinator: Dr Ahmed Farouk
- Date last reviewed: July 2022
- Requirements (prerequisites) if any :
  - > None
- Requirements from the students to achieve course ILOs are clarified in the joining log book.

### **4** This course consists of 6 Units

- ➤ Unit (Module )1 Thoracic Diseases
- ➤ Unit (Module )2 Acquired Heart Disease
- ➤ Unit (Module )3 Congenital Heart Disease
- > Unit (Module )4 Thoracic Trauma
- ➤ Unit (Module )5 Extracorporeal Bypass
- **➤** Unit (Module )6 Minor Procedures
- ➤ Unit (Module) 7 Applied Surgical Cardiothoracic Anatomy
- ➤ Unit (Module) 8 Applied Surgical Cardiothoracic Pathology

### Unit Coordinator (s):

Unit	Principle Coordinator	Assistant coordinators
1- Unit (Module) 1 Thoracic Diseases	Prof .Ali M. Abdelwahab	Dr.Mohamed Ayyad Dr.Mohamed Alaa
2- Unit (Module) 2 Acquired Heart Disease	Prof. Mahmmoud A. Hamad	Dr .Mahmmoud Khairy Elhaish Dr. Anwar Amin Attia
3- Unit (Module) 3 Congenital Heart Disease	Prof. Ahmed El- Minshawy	Dr Ahmed Ghoneim Dr Ahmed Farouk
4- Unit (Module) 4 Thoracic Trauma	Prof. Ali M. Abdelwahhab	Dr. Mohammed Ayyad Dr. Mohammed Alaa
5- Unit (Module) 5 Extracorporeal Bypass	Prof. Mahmmoud A. Hamad	Dr. Mahmmoud Khairy Elhaish Dr. Anwar Amin Attia
6-Unit (Module )6 Minor Procedures	Prof. Ahmed Elminshawy	Dr. Ahmed ghoniem Dr. Ahmed Farouk
Unit (Module) 7 Applied Surgical Cardiothoracic Anatomy	Prof. Ahmed El- Minshawy	Dr Ahmed Farouk
Unit (Module) 8 Applied Surgical Cardiothoracic Pathology	Prof. Ahmed El- Minshawy	Dr Ahmed Farouk

#### 2. Course Aims

- 1. To enable MD students to master high level of clinical skills, in addition to update medical knowledge as well as clinical experience and competence in the area of cardiothoracic surgery
- 2. Provide candidates with fundamental knowledge and skills of post cardiac surgery intensive care as regard dealing with critically ill patients.
- 3. To gain proficiency in the use and performance of bronchoscopy as diagnostic and therapeutic tools emphasizing indications, complications and likelihood of successful outcome.
- 4. To acquire the anatomical and pathological Background necessary for cardiothoracic surgery in clinical reasoning, diagnosis and management.

### 5. Course intended learning outcomes (ILOs):

#### **Unit 1 (Module) Thoracic disease**

### A-Knowledge and understanding

ILOs	Methods of teaching/	Methods of Evaluation
	learning	
A. Explain update and evidence based etiology,	-Didactic	-OSCE at
clinical picture, diagnosis and management of the	(lectures,	the end of
following common diseases and clinical	seminars,	each year
conditions:	tutorial)	-log book &
Chest Wall	-Clinical	portfolio
A. Acquired Abnormalities and Neoplasms	rounds	- One MCQ
B. Congenital Abnormalities and Thoracic Outlet	-Seminars	examination
Syndrome	-Clinical	at the

Lungs & Pleura	rotations	second half
A. Non-Neoplastic Lung Disease	-Service	of the
в. Neoplastic Lung Disease	teaching	second year
C. Congenital Lung Disease		and another
D. Diseases of the Pleura		one in the
Diaphragm		third year
A. Acquired Abnormalities		-Written
B. Neoplasms		and oral
C. Congenital Abnormalities		examination
Esophagus		
A. Congenital Abnormalities		
B. Acquired Abnormalities		
C. Neoplasms		
B. Mention the principles of	-Didactic	-OSCE at
B. Wention the principles of	(lectures,	the end of
Lung Transplantation	seminars,	
<u>Lung Transplantation</u>	tutorial)	each year -log book &
1. Indications and contraindications for lung	-Clinical	portfolio
transplantation	rounds	- One MCQ
a. Patient evaluation	-Seminars	examination
b. Patient selection	-Clinical	at the
c. Informed consent	rotations	second half
2. Immunosuppressive therapy in lung	-Service	of the
transplantation	teaching	
a. Evaluation of therapy	teaching	second year and another
b. Drugs		one in the
c. Complications		third year
3. Technique of single and double lung		-Written
transplantation		and oral
a. Left lung		examination
b. Right lung		CAGIIIIIation
c. Extracorporeal bypass techniques and indications		
for their use		
4. Donor evaluation		
a. History		

b. Physiology		
c. Radiology		
5. Donor preparation and organ harvest		
a. Brain death, legal and family-related issues		
b. Organ procurement and preservation		
c. Pharmacologic and technical aspects of donor lung		
harvest operations		
6. Pulmonary rejection		
a. Signs and symptoms		
b. Endobronchial biopsy		
c. Histologic evaluation of rejection		
d. Management of rejection		
7. Immunosuppressive therapy		
a. Immunosuppressive drugs and their side effects		
b. Antibody therapy and side effects		
c. Complications of immunosuppressive therapy		
8. Outcomes		
C. Mention basics of the following rare diseases and	-Didactic	-OSCE at
conditions	(lectures,	the end of
<u>Trachea &amp; Bronchii</u>	seminars,	each year
A. Congenital Abnormalities	tutorial)	-log book &
<u>Mediastinum &amp; Pericardium</u>	-Clinical	portfolio
A. Congenital Abnormalities of the Mediastinum	rounds	- One MCQ
B. Congenital Abnormalities of the Pericardium	-Seminars	examination
	-Clinical	at the
	rotations	second half
	-Service	of the
	teaching	second year
		and another
		one in the
		third year
		-Written
		and oral
		examination
B. Explain the facts and principles of the relevant		

basic and clinically supportive sciences related to Thoracic disease	
C. Explain the facts and principles of the relevant	
basic and clinically supportive sciences	
related to Thoracic disease	
D. Describe the basic ethical and medicolegal	
principles revenant to the Thoracic disease	
E. Describe the basics of quality assurance to	
ensure good clinical care in his field	
F. Explain the ethical and scientific principles of	
medical research	
G. Explain the impact of common health problems	
in the field of Cardiothoracic Surgery on the	
society.	

### **B-Intellectual outcomes**

ILOs	Methods of teaching/	Methods of Evaluation
	Learning	
A. Design and present case in common problem related to Thoracic disease	-Clinical rounds	-Procedure and case presentation
	-Senior staff experience	-Log book & Portfolio
B. Apply the basic and clinically supportive sciences which are appropriate to Thoracic disease related conditions / problem / topics.		
C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Thoracic disease  D. Plan research projects.		

E. Write scientific papers.	
F. Lead risk management activities as a part of	
clinical governs including postoperative morbidity	
and mortality.	
G. Plan quality improvement activities in the field	
of medical education and clinical practice in his	
Thoracic disease.	
H. Create and innovate plans, systems, and other	
issues for improvement of performance in his	
practice.	
I. Present and defend his / her data in front of a	
panel of experts	
J. Formulate management plans and alternative	
decisions in different situations in the field of	
Thoracic disease.	

## **C-Practical skills (Patient Care)**

ILOs	Methods of	Methods of
	teaching/	Evaluation
	learning	
A. Take history, examine and clinically	-Didactic	-OSCE at
diagnose different conditions related to	(lectures,	the end of
thoracic disease.	seminars,	each year
	tutorial)	-log book &
	-Clinical	portfolio
	rounds	- One MCQ
	Clinical	examination
	rotations	at the
	(service	second half
	teaching)	of the
		second year
		and another
		one in the
		third year

		-Clinical
		exam
<ul> <li>B. Order the following non invasive and invasive diagnostic procedures / tools</li> <li>Appropriate radiographic imaging</li> <li>Appropriate laboratory investigations</li> <li>ECG</li> <li>Arterial blood gases</li> <li>Pulmonary function tests</li> <li>Pleural aspiration</li> <li>Pleural and lung biopsy</li> <li>Echocardiography</li> </ul>	-Clinical round with senior staff Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list
C. Interpret the following non invasive and invasive diagnostic procedures	-Clinical round with senior staff Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list
<ul> <li>D. Perform the following non invasive and invasive diagnostic procedures</li> <li>ECG</li> <li>Arterial blood gases</li> <li>Pleural aspiration</li> <li>Pleural and lung biopsy</li> </ul>	-Clinical round with senior staff -Observation -Post graduate teaching -Hand on workshops -Perform	- Procedure presentation - Log book - Check list

<ul> <li>E. Prescribe the following non invasive and invasive therapeutic procedures.</li> <li>1. Lobectomy</li> <li>2. Pneumonectomy</li> <li>3. Sleeve resection</li> <li>4. Decortication</li> <li>5. Mediastinal tumor</li> <li>6. Lung volume reduction surgery</li> <li>7. Transplantation - lung, combined heart/lung</li> <li>8. Other Thoracic Major, ie Pleurectomy or Chest Wall</li> <li>9. Oesophageal resection</li> <li>10. Other oesophageal procedures</li> </ul>	under supervision of senior staff -Clinical round with senior staff -Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list
<ul> <li>11. insertion of intercostals tubes.</li> <li>F. Perform the following non invasive and invasive therapeutic procedures</li> <li>1. Lobectomy</li> <li>2. Pneumonectomy</li> <li>3. Sleeve resection</li> <li>4. Decortication</li> <li>5. Mediastinal tumor</li> <li>6. Lung volume reduction surgery</li> <li>7. Transplantation - lung, combined heart/lung</li> <li>8. Other Thoracic Major, ie Pleurectomy or Chest Wall</li> <li>9. Oesophageal resection</li> <li>10. Other oesophageal procedures</li> <li>11. insertion of intercostals tubes</li> </ul>	-Clinical round with senior staff -Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list

G. Develop and carry out patient management plans for the problems mentioned in A.A	-Clinical round with senior staff	
H. Counsel and educate patients and their family about the problems mentioned in A.A	-Clinical round with senior staff	
I. Use information technology to support patient care decisions and patient education for thoracic disease related conditions.	Seminars Tutorials Clinical audits	
J. Provide health care services aimed at preventing thoracic diseases	-Clinical round with senior staff	
K. Work with health care professionals, including those from other disciplines, to provide patient-focused care.	-Clinical round with senior staff	
L. Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets.( Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)		

### **D-General Skills**

# **Practice-Based Learning and Improvement**

ILOs	Methods of teaching/ Learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology in the common problems (plan and conduct audit cycles)	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
B. Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
C. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
D. Use information technology to manage information, access on-line medical	-Simulations -Clinical	- Global rating

information; and support their own	round	-Procedure &
education	-Seminars	case
	-Lectures	presentation
	-Case	-Log book &
	presentation	Portfolios
	-Hand on	
	workshops	- Check list
E. Lead the learning of students and other	-Simulations	- Global
health care professionals.	-Clinical	rating
realth care professionals.	round	-Procedure &
	-Seminars	case
	-Lectures	presentation
	-Case	-Log book &
	presentation	Portfolios
	-Hand on	
	workshops	- Check list

# **Interpersonal and Communication Skills**

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Create and sustain a therapeutic and ethically sound relationship with patients	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Chick list
G. Perform the following oral communications:		
Interpretation of the results of different investigations related to thoracic disease and discussion of different therapeutic		

options	
H. Fill the following reports:	
Patients' medical reports	
Operative reports	
<ul> <li>Pathology submission reports</li> </ul>	
Discharge summary reports	
I. Work effectively with others as a member	
or leader of a health care team as regard	
diagnosis and treatment of conditions	
mentioned in A.A	

## Professionalism

ILOs	Methods of	Methods of
	teaching/	Evaluation
	Learning	
J. Demonstrate respect, compassion, and	Observation	-Objective
integrity; a responsiveness to the needs of	- Senior staff	structured
patients and society that supersedes self-	experience	clinical
interest.	-Case taking	examination
		- Patient
		survey
K. Demonstrate a commitment to ethical		- 3600
principles pertaining to provision or		global
withholding of clinical care, confidentiality		rating
of patient information, informed consent,		
and business practices.		
·		
L. Demonstrate sensitivity and responsiveness		
to patients' culture, age, gender, and		
disabilities		

### **Systems-Based Practice**

ILOs	Methods of teaching/ learning	Methods of Evaluation
M.Work effectively in different health care delivery settings and systems.		- 360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care		- Check list evaluation of live or recorded performance
O. Advocate for quality patient care and assist patients in dealing with system complexities		<ul><li>- 360o global</li><li>rating</li><li>- Patient</li><li>survey</li></ul>
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

# **Unit (Module) 2 Acquired Heart Disease**

# A-Knowledge and understanding

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Explain update and evidence based etiology,	-Didactic	-OSCE at
clinical picture, diagnosis and management of the	(lectures,	the end of
following common diseases and clinical conditions	seminars,	each year
including:	tutorial)	-log book &
	-Clinical	portfolio
Coronary Artery Disease	rounds	- One MCQ
➤ Rheumatic heart disease	-Seminars	examination
Rneumatic neart disease	-Clinical	at the
> Valvular Heart Disease	rotations	second half
	-Service	of the
Mitral valve	teaching	second year
a. Mitral stenosis		and another
b. Mitral incompetence		one in the
Aortic valve		third year
a. Aortic stenosis		-Written
b. Aortic incompetence		and oral
<u>Tricuspid valve</u>		examination
a. Tricuspid incompetence		
b. Tricuspid stenosis		
Multiple valve disease		
B. Mention the principles of	-Didactic	-OSCE at
Radiographic cardiac and coronary anatomy	(lectures,	the end of
<ul> <li>Coronary artery bypass grafting</li> </ul>	seminars,	each year
<ul> <li>Preoperative evaluation</li> </ul>	tutorial)	-log book &
<ul> <li>Postoperative care</li> </ul>	-Clinical	portfolio
• ECG	rounds	- One MCQ
	-Seminars	examination

<ul> <li>Ecchocardiography</li> <li>Cardiac Transplantation</li> <li>Lung Transplantation</li> <li>Heart-Lung Transplantation</li> <li>Immunosuppressive therapy in organ transplantation</li> <li>Donor preparation and harvest</li> </ul>	-Clinical rotations -Service teaching	at the second half of the second year and another one in the third year -Written and oral examination
<ul> <li>Rejection of transplanted organ(s)</li> </ul>		
Immunosuppressive therapy		
C. Mention basics of the following rare diseases and conditions:	-Didactic (lectures, seminars,	-OSCE at the end of each year
Myocarditis, Cardiomyopathy, Hypertrophic	tutorial)	-log book &
Obstructive Cardiomyopathy, Cardiac Tumors.	-Clinical rounds -Seminars	portfolio - One MCQ examination
<ul> <li>Abnormalities of the Aorta (Aortic aneurysms,</li> </ul>	-Clinical	at the
atherosclerotic, aortic dissections)	rotations	second half
Cardiac Arrhythmias	-Service teaching	of the second year and another one in the third year -Written and oral examination
A. Explain the facts and principles of the relevant		
basic supportive sciences related to acquired heart disease including, anatomy, pathology and pharmacological treatment.		
<b>B.</b> Explain the facts and principles of the relevant		

clinically supportive sciences related to acquired	
heart disease including ECG interpretation,	
echocardiography, preoperative assessment,	
postoperative care.	
C. Describe the basic ethical and medicolegal	
principles revenant to the acquired heart	
disease including organ transplantation, donor	
preparation and organ harvest, family issues.	
<b>D.</b> Describe the basics of quality assurance to	
ensure good clinical care in cardiothoracic	
surgery.	
E. Explain the ethical and scientific principles of	
medical research	
F. Explain the impact of common health problems	
in the field of acquired heart disease on the	
society.	

## **B-Intellectual outcomes**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design / present case in common problem related to acquired heart disease.	-Clinical rounds -Senior staff experience	-Procedure and case presentation -Log book & Portfolio
B. Apply the basic and clinically supportive sciences which are appropriate to the acquired heart disease related conditions / problem / topics.		
C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to acquired heart disease.		

D. Plan research projects.	
E. Write scientific papers.	
F. Lead risk management activities as a part of clinical governs including rate of postoperative mortality and morbidity.	
G. Plan quality improvement activities in the field of medical education and clinical practice in his acquired heart disease.	
H. Create / innovate plans, systems, and other issues for improvement of performance in his practice.	
I. Present and defend his / her data in front of a panel of experts	
J. Formulate management plans and alternative decisions in different situations in the field of acquired heart disease.	

# **C-Practical skills (Patient Care)**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to acquired heart diseases as mentioned in A.	-Didactic (lectures, seminars, tutorial) -Clinical rounds Clinical rotations (service teaching)	-OSCE at the end of each year -log book & portfolio - One MCQ examination at the second half of the second year and another one in the

B. Order the following non invasive and invasive diagnostic procedures  1 Laboratory Tests:	-Clinical round with senior staff Observation	third year -Clinical exam - Procedure presentation - Log book - Check list
<ul> <li>Complete blood counts</li> <li>serum chemistries</li> <li>liver function test</li> <li>coagulogram</li> <li>Electrocardiogram:</li> </ul>	-Post graduate teaching -Hand on workshops	
- Resting ECG - Stress ECG 3 Chest X-ray	-Perform under supervision of senior	
4 Echocardiography:  - M-Mode and Two-dimensional Echocardiography  - Doppler Flow Echocardiography  - Color-flow Doppler Interrogation  - Tissue Doppler Imaging  - Three-dimensional Echocardiography  - Trans-oesophageal Echocardiography	staff	
<ul> <li>Intraoperative Echocardiography</li> <li>Magnetic Resonance (MR) Imaging         <ul> <li>Spin-echo Imaging</li> <li>Gradient-echo Imaging</li> <ul> <li>Two-dimensional Gradient-echo Imaging,</li> <li>Three-dimensional Gradient-echo Imaging</li> <li>Velocity-encoded Phase Contrast MR</li> <li>Gadolinium Contrast-enhanced MR</li></ul></ul></li></ul>		

8 Nuclear scintigrams (PET scanning)		
<ul> <li>6. Invasive Investigation (Cardiac Catheterization)</li> <li>- Coronary angiography</li> <li>- Right anterior oblique views</li> <li>- Left anterior oblique views</li> <li>- Cranial view</li> <li>- Ventriculography</li> </ul>		
7. Cardiac Biopsy		
C. Interpret the following non invasive and invasive diagnostic procedures / tools  1 Laboratory Tests:  - Complete blood counts  - serum chemistries  - liver function test	-Clinical round with senior staff - Observation -Post graduate	<ul><li>Procedure</li><li>presentation</li><li>Log book</li><li>Check list</li></ul>
<ul> <li>coagulogram</li> <li>Electrocardiogram:         <ul> <li>Resting ECG</li> <li>Stress ECG</li> </ul> </li> </ul>	teaching -Hand on workshops -Perform	
3 Chest X-ray	under	
4 Echocardiography:  - M-Mode and Two-dimensional Echocardiography  - Doppler Flow Echocardiography  - Color-flow Doppler Interrogation  - Tissue Doppler Imaging  - Three-dimensional Echocardiography  - Trans-oesophageal Echocardiography  - Intraoperative Echocardiography  5 Magnetic Resonance (MR) Imaging  - Spin-echo Imaging  - Gradient-echo Imaging  - Two-dimensional Gradient-echo Imaging,  - Three-dimensional Gradient-echo Imaging	supervision of senior staff	

<ul> <li>Velocity-encoded Phase Contrast MR</li> <li>Gadolinium Contrast-enhanced MR         Angiography</li> <li>Computed Tomography (CT)         - MDCT Technique</li> <li>Arterial blood gases</li> <li>Nuclear scintigrams (PET scanning)</li> <li>Invasive Investigation (Cardiac Catheterization)         - Coronary angiography               - Right anterior oblique views               - Left anterior oblique views               - Cranial view               - Ventriculography</li> </ul>		
D. Perform the following invasive diagnostic procedures  1 Arterial blood gases 2 Pericardiocentesis 3 Thoracoscope 4 Myocardial biopsy	Clinical round with senior staff Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list
<ul> <li>E. Prescribe the following invasive therapeutic procedures:</li> <li>General cardiac procedures: <ol> <li>Saphenous vein harvest</li> <li>Radial artery harvest</li> <li>Median sternotomy</li> </ol> </li> </ul>	Observation -Post graduate teaching -Hand on workshops	- Procedure presentation - Log book - Check list

- 4. Internal mammary artery harvest
- 5. Cannulation for bypass
- 6. Aorto-coronary anastomosis
- 7. Other proximal anastomosis, e.g. T graft.
- 9. Distal coronary anastomosis
- 10. Sternal closure
- 11. Re-Do sternotomy

#### Coronary bypass surgery

Off Pump coronary bypass. All coronary bypass surgery.

#### AORTIC VALVE SURGERY

1. Aortic Valve Replacement

Mechanical prosthesis

Stented bioprosthesis

Stentless valve

Homograft

2. Aortic Valve Repair

#### > AORTIC SURGERY

- 1. Ascending aorta (supracoronary)
- 2. Aortic valve plus supracoronary aorta
- 3. Bental/Cabrol/Valve Sparing Root
- 4. Aortic arch replacement
- 5. Descending aorta procedure
- 6. Thoraco abdominal repair
- 7. Aortic Dissection:

TypeA

**TypeB** 

8. Co-arctation repair

#### MITRAL VALVE SURGERY

- 1. Mitral Valve Repair
- 2. Mitral Valve Replacement

Mechanical prosthesis

**Bioprosthesis** 

#### OTHER VALVE SURGERY

<ol> <li>Tricuspid Valve Procedure</li> <li>Double Valve Procedure</li> <li>Triple Valve Procedure</li> <li>OTHER MAJOR CARDIAC OPERATIONS</li> <li>Infarct VSD/ rupture</li> <li>Cardiac Tumors</li> </ol>		
Myxoma Other 3. Pulmonary embolectomy 4. Surgery for atrial fibrillation		
<ul><li>5. Miscellaneous major procedures</li><li>F. Perform the following invasive therapeutic procedures:</li></ul>	-Observation -Post graduate teaching	- Procedure presentation - Log book
<ul> <li>General cardiac procedures:</li> <li>1. Saphenous vein harvest</li> <li>2. Radial artery harvest</li> <li>3. Median sternotomy</li> <li>4. Internal mammary artery harvest</li> <li>5. Cannulation for bypass</li> <li>6. Aorto-coronary anastomosis</li> <li>9. Distal coronary anastomosis</li> <li>10. Sternal closure</li> <li>11. Re-Do sternotomy</li> </ul>	-Hand on workshops	- Check list
<ul> <li>Coronary bypass surgery</li> <li>Off Pump coronary bypass.</li> <li>All coronary bypass surgery.</li> </ul>		
<ul> <li>AORTIC VALVE SURGERY</li> <li>1. Aortic Valve Replacement</li> <li>Mechanical prosthesis</li> <li>2. Aortic Valve Repair</li> </ul>		
<ul> <li>AORTIC SURGERY</li> <li>1. Co-arctation repair</li> <li>MITRAL VALVE SURGERY</li> </ul>		

1. Mitral Valve Repair	
2. Mitral Valve Replacement  Mechanical prosthesis	
·	
> OTHER VALVE SURGERY	
1. Tricuspid Valve Procedure	
2. Double Valve Procedure	
3. Triple Valve Procedure	Clinical
G. Develop and carry out patient management plans	round with
for the following problems	senior staff
Coronary Artery Disease     Alyacarditis Cardiamyanathy Ulynortrophia	
2. Myocarditis, Cardiomyopathy, Hypertrophic Obstructive Cardiomyopathy, Cardiac Tumors	
3. Abnormalities of the Aorta	
4. Cardiac Arrhythmias	
5. Valvular Heart Disease	
6. Cardiac Transplantation	
7. Lung Transplantation	
8. Heart-Lung Transplantation	
H. Counsel and educate patients and their family	Clinical
about	round with
1. Coronary Artery Disease	senior staff
2. Myocarditis, Cardiomyopathy, Hypertrophic	
Obstructive Cardiomyopathy, Cardiac Tumors	
3. Abnormalities of the Aorta	
4. Cardiac Arrhythmias	
5. Valvular Heart Disease	
<ul><li>6. Cardiac Transplantation</li><li>7. Lung Transplantation</li></ul>	
8. Heart-Lung Transplantation	
	-Clinical
I. Use information technology to support patient care decisions and patient education for Acquired	round with
Heart Disease related conditions.	senior staff
Treat Disease related conditions.	

<ol> <li>J. Provide health care services aimed at preventing the following conditions</li> <li>Coronary Artery Disease</li> <li>Myocarditis, Cardiomyopathy, Hypertrophic Obstructive Cardiomyopathy, Cardiac Tumors</li> <li>Abnormalities of the Aorta</li> <li>Cardiac Arrhythmias</li> <li>Valvular Heart Disease</li> <li>Cardiac Transplantation</li> <li>Lung Transplantation</li> <li>Heart-Lung Transplantation</li> </ol>	-Clinical round with senior staff	
K. Work with health care professionals, including those from other disciplines, to provide patient-focused care .	-Clinical round with senior staff	
L. Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets. (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)		

### **D-General Skills**

# **Practice-Based Learning and Improvement**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology in the common problems (plan and conduct audit cycles)	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
B. Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
C. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D. Use information technology to manage information, access on-line medical information; and support their own education		
E. Lead the learning of students and other health care professionals.		

# **Interpersonal and Communication Skills**

Methods of teaching/	Methods of Evaluation
learning	
-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
	teaching/ learning -Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on

### **Professionalism**

ILOs	Methods of teaching/	Methods of Evaluation
	Learning	
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Observation - Senior staff experience Case taking	-Objective structured clinical examination - Patient survey
K. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		- 360o global rating
L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

# **Systems-Based Practice**

ILOs	Methods of teaching/ learning	Methods of Evaluation
M.Work effectively in different health care delivery settings and systems.	- Observation - Senior staff experience	- 360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care		- Check list evaluation of live or recorded performance
O. Advocate for quality patient care and assist		- 360o global

patients in dealing with system complexities	rating - Patient survey
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance	

# **Unit (Module) 3 Congenital Heart Disease**

# A-Knowledge and understanding

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Explain update and evidence based etiology,	-Didactic	-OSCE at
clinical picture, diagnosis and management of	(lectures,	the end of
the following common diseases and clinical	seminars,	each year
conditions:	tutorial)	-log book &
Left-To-Right Shunts	-Clinical	portfolio
1. Atrial septal defect	rounds	- One MCQ
2. Ventricular septal defect	-Seminars	examination
3. Patent ductus arteriosus	-Clinical	at the
4. Atrioventricular septal defect	rotations	second half
Cyanotic Anomalies	-Service	of the
1. Tetralogy of Fallot	teaching	second year
2. Transposition of the great vessels (TGA)		and another
Obstructive Anomalies		one in the
1. Aortic stenosis		third year
2. Pulmonary stenosis		-Written
3. Coarctation of the aorta		and oral
		examination
B. Mention the principles of	-Didactic	-OSCE at
Cardiopulmonary Bypass for Operations on	(lectures,	the end of
Congenital Cardiac Anomalies	seminars,	each year
1. Monitoring for cardiopulmonary bypass	tutorial)	-log book &
a. Arterial pressure lines	-Clinical	portfolio
b. Central venous pressure, pulmonary artery	rounds	- One MCQ
pressure	-Seminars	examination
c. Temperature monitoring (nasopharyngeal,	-Clinical	at the
esophageal, rectal, bladder)	rotations	second half
d. O2 saturation, end-tidal CO2	-Service	of the
e. Urine output	teaching	second year

#### 2. Cannulation

- a. Single venous (indications, technique)
- b. Double venous (indications, technique)
- c. Arterial (technique)
- d. Venting (indications, technique)
- e. Cardioplegia
- 3. Myocardial preservation techniques
  - a. Crystalloid, blood
  - b. Cold, warm
  - c. Antegrade, retrograde
  - d. Additives
  - e. Fibrillation
- 4. Profound hypothermia and total circulatory arrest
  - a. Indications
  - b. Advantages, disadvantages
  - c. Safe duration of total circulatory arrest
  - d. Early cerebral complications
  - e. Late intellectual, neurological, psychiatric outcome
  - c. Complications

#### > Principles of Postoperative Care

- 1. Preoperative assessment and preparation
  - a. Clinical and diagnostic data
  - b. Physical examination
- 2. Expected postoperative course for each operation.
- 3. Ventilatory management
  - a. Reactive pulmonary vasculature
  - b. Left heart syndrome
  - c. Right heart bypass operations
- 4. Pharmacologic management
  - a. After right heart bypass operations
  - b. With parallel circulation
- c. With reactive reactive pulmonary

and another one in the third year -Written and oral examination

vasculature		
A. Mention basics of the following rare diseases	-Didactic	-OSCE at
and conditions	(lectures,	the end of
Left-To-Right Shunts	seminars,	each year
1. Double-outlet right ventricle	tutorial)	-log book &
2. Aorto-pulmonary window	-Clinical	portfolio
a. Clinical features	rounds	- One MCQ
<ol> <li>Natural history (development of</li> </ol>	-Seminars	examination
pulmonary vascular obstructive	-Clinical	at the
disease)	rotations	second half
<ol><li>Symptoms and signs</li></ol>	-Service	of the
3. Echocardiogram, angiocardiogram,	teaching	second year
cardiac catheterization		and another
4. Chest x-ray, ECG		one in the
<ol><li>Indications for surgery</li></ol>		third year
b. Operative repair		-Written
c. Outcome		and oral
<ol> <li>Expected operative mortality</li> </ol>		examination
2. Long-term results		
3. Complications		
Cyanotic Anomalies		
1. Truncus arteriosus		
2. Tricuspid atresia		
3. Total anomalous pulmonary venous		
connection		
4. Ebstein's anomaly		
Obstructive Anomalies		
1. Interrupted aortic arch		
2. Vascular ring		
Miscellaneous Anomalies		
B. Explain the facts and principles of the relevant		
basic and clinically supportive sciences related to		
Congenital heart disease		
C. Explain the facts and principles of the relevant		
basic and clinically supportive sciences related to		

Congenital heart disease	
D. Describe the basic ethical and medicolegal	
principles revenant to the Congenital heart	
disease	
E. Describe the basics of quality assurance to	
ensure good clinical care in cardiothoracic	
surgery	
F. Explain the ethical and scientific principles of	
medical research	
G. Explain the impact of common health problems	
in the field of Congenital heart disease on the	
society.	

#### **B-Intellectual outcomes**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design / present case in common problem related to Congenital heart disease	-Clinical rounds -Senior staff experience	-Procedure and case presentation -Log book & Portfolio
B. Apply the basic and clinically supportive sciences which are appropriate to the Congenital heart disease related conditions / problem / topics.		
C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Congenital heart disease		
D. Plan research projects.  E. Write scientific papers.		

F. Lead risk management activities as a part of	
clinical governs including different peri-	
operative and post operative complications.	
G. Plain quality improvement activities in the	
field of medical education and clinical practice	
in Congenital heart disease.	
H. Create and innovate plans, systems, and	
other issues for improvement of performance	
in his practice.	
I. Present and defend his / her data in front of	
a panel of experts	
J. Formulate management plans and	
alternative decisions in different situations in	
the field of Congenital heart disease.	

## C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to Congenital heart disease.	-Didactic (lectures, seminars, tutorial) -Clinical rounds Clinical rotations (service teaching)	-OSCE at the end of each year -log book & portfolio - One MCQ examination at the second half of the second year and another one in the third year -Clinical

		exam
B. Order the following non invasive and invasive diagnostic procedures same as in Module 2 CB	-Clinical round with senior staff Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list
C. Interpret the following non invasive and invasive diagnostic procedures / tools same as in Module 2 C C.	-Clinical round with senior staff -Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list
<ul> <li>D. Perform the following non invasive and invasive diagnostic procedures</li> <li>1. Pericardiocentesisis</li> <li>2. Bronchoscopy</li> <li>3. Esophaguscopy</li> <li>4. Thoracoscopy</li> <li>5. Aretrial blood gases</li> <li>6. Pleural aspiration</li> <li>7. Pleural and lung biopsy</li> </ul>	Clinical round with senior staff -Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list
<ul><li>E. Prescribe non invasive/invasive therapeutic procedures related to the management of:</li><li>Left-To-Right Shunts</li></ul>	Observation -Post graduate teaching -Hand on	<ul><li>Procedure</li><li>presentation</li><li>Log book</li><li>Check list</li></ul>

1. Atrial septal defect	workshops	
2. Ventricular septal defect		
3. Patent ductus arteriosus		
4. Atrioventricular septal defect		
5. Double-outlet right ventricle		
6. Aorto-pulmonary window		
Cyanotic Anomalies		
1. Tetralogy of Fallot		
2. Transposition of the great vessels		
(TGA)		
3. Truncus arteriosus		
4. Tricuspid atresia		
5. Total anomalous pulmonary		
venous connection		
6. Ebstein's anomaly		
Obstructive Anomalies		
1. Aortic stenosis		
2. Pulmonary stenosis		
3. Coarctation of the aorta		
4. Interrupted aortic arch		
5. Vascular ring		
Miscellaneous Anomalies		
1. Normal and abnormal anatomy		
2. Physiology of each anomaly		
3. Preoperative evaluation and		
diagnosis		
4. Operative strategies and		
complications		
5. Outcomes		
Principles of Postoperative Care		
1. Preoperative assessment and		
preparation		
2. Expected postoperative course for		
each operation.		
3. Ventilatory management		

4. Pharmacologic management		
<ul> <li>4. Pharmacologic management</li> <li>F. Perform the following non invasive and invasive therapeutic procedures:</li> <li>Cardiopulmonary Bypass for Operations on Congenital Cardiac Anomalies</li> <li>1. Performing arterial and venous cannulation and initiates cardiopulmonary bypass.</li> <li>2. Directing the perfusionist in the intraoperative management and conduct of cardiopulmonary bypass.</li> <li>3. Performing or participates in the repair of congenital heart defects using cardiopulmonary bypass.</li> <li>4. Performing intracardiac de-airing and manages separation from CPB.</li> <li>Left-To-Right Shunts</li> <li>1. Participating in or performs the operative repair of atrial septal defects, ventricular septal defects, patent ductus</li> </ul>	-Observation -Post graduate teaching -Hand on workshops	- Procedure presentation - Log book - Check list
arteriosus, and pulmonary artery banding.  2. Participating in the repair of more		
complex cardiac anomalies.  3. Performing the preoperative evaluation of patients with each of these		
<ul><li>anomalies.</li><li>4. Management of postoperative care.</li><li>Cyanotic Anomalies</li></ul>		
1. Participating in or performs the major		

palliative operations for these congenital cardiac anomalies.

- 2. Participating in operative repair of tetralogy, TGA, truncus arteriosus, TAPVR, Ebstein's anomaly, and Fontan-type operations.
- 3. Performing preoperative evaluation and preparation.
- 4. Management postoperative care.

#### > Obstructive Anomalies

- 1. Performing corrections for patent ductus arteriosus and coarctation of the aorta.
- 2. Participating in or performs aortic valvotomy, repair of supravalvular and subvalvular aortic stenosis, pulmonary valvotomy, correction of subvalvular pulmonary stenosis, correction of vascular rings.
- 3. Participating in operations for left ventricular outflow obstruction and interrupted aortic arch.
- 4. Performing preoperative evaluation and preparation.
- 5. Management postoperative care.
- 6. Using prostaglandins in the management of patients with neonatal coarctation, interrupted aortic arch, critical aortic stenosis.

#### Miscellaneous Anomalies

- Performing or assisting in pacemaker insertion, systemic-to-pulmonary artery
- shunting for pulmonary atresia or stenosis (with or without VSD), and

- pulmonary artery banding for large leftto-right shunts.
- 2. Evaluating angiocardiograms, echocardiograms, and cardiac catheterizations of

the above anomalies.

- 3. Developing treatment plans for the above anomalies.
- 4. Participating in or performing operative treatment for the above anomalies.
- 5. Management postoperative care for the above anomalies.

#### > Principles of Postoperative Care

 Management ventilators for infants and children with and without obligatory

intracardiac shunts,

2. Assessing the cardiac output and pulmonary and systemic resistance in infants

and children.

- 3. Using physiologic and pharmacologic manipulation of preload, myocardial contractility, heart rate, pulmonary vascular resistance and afterload to optimize cardiac output in critically ill infants and children.
- Evaluating the metabolic reserve of neonates and infants and provides prompt

therapeutic intervention as indicated.

Anticipating problems and complications of postoperative pediatric patients

and provides appropriate treatment.  6. Understanding the indications and		
techniques of establishing ECMO		
G. Develop and carry out patient management plans for the following problems	Clinical round with senior staff	
➤ Left-To-Right Shunts		
1. Atrial septal defect		
2. Ventricular septal defect		
3. Patent ductus arteriosus		
4. Atrioventricular septal defect		
5. Double-outlet right ventricle		
6. Aorto-pulmonary window		
Cyanotic Anomalies		
1. Tetralogy of Fallot		
2. Transposition of the great vessels		
(TGA)		
3. Truncus arteriosus		
4. Tricuspid atresia		
5. Total anomalous pulmonary		
venous connection		
6. Ebstein's anomaly		
Obstructive Anomalies		
1. Aortic stenosis		
2. Pulmonary stenosis		
3. Coarctation of the aorta		
4. Interrupted aortic arch		
5. Vascular ring		
H. Counsel and educate patients and their	Clinical round	
family about congenital heart disease	with senior staff	
including pre operative and post		
operative care, medication and		
rehabilitation.		
I. Use information technology to support	-Clinical round	

patient care decisions and patient education for Congenital Heart Disease related conditions.	with senior staff	
<ul> <li>J. Provide health care services aimed at preventing the following conditions         <ul> <li>congenital defects</li> <li>peri operative and post operative complications.</li> </ul> </li> </ul>	-Clinical round with senior staff	
K. Work with health care professionals, including those from other disciplines, to provide patient-focused care.	-Clinical round with senior staff	
L. Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets.( Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)		

#### **D-General Skills**

## **Practice-Based Learning and Improvement**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology in the common problems (plan and conduct audit cycles)	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on	- Global rating -Procedure & case presentation -Log book & Portfolios

	workshops	- Check list
B. Locate, appraises, and assimilates evidence	-Simulations	- Global
from scientific studies related to patients'	-Clinical	rating
health problems.	round	-Procedure
	-Seminars	& case
	-Lectures	presentation
	-Case	-Log book &
	presentation	Portfolios
	-Hand on	
	workshops	- Check list
C. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D. Use information technology to manage information, access on-line medical information; and support their own education		
E. Lead the learning of students and other health care professionals.		

## **Interpersonal and Communication Skills**

ILOs	Methods of	Methods of
	teaching/	Evaluation
	learning	
F. Create and sustain a therapeutic and	-Simulations	- Global
ethically sound relationship with patients	-Clinical	rating
	round	-Procedure &
	-Seminars	case
	-Lectures	presentation
	-Case	-Log book &
	presentation	Portfolios
	-Hand on	

	workshops	- Check list
<ul> <li>G. Perform the following oral communications:</li> <li>Interpretation of the results of different investigations related to congenital heart disease and discussion of different therapeutic options</li> </ul>		
<ul> <li>H. Fill the following reports:</li> <li>Patients' medical reports</li> <li>Operative reports</li> <li>Pathology submission reports</li> <li>Discharge summary reports</li> </ul>		
Work effectively with others as a member or leader of a health care team.		

#### **Professionalism**

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	- Observation - Senior staff experience - Case taking	-Objective structured clinical examination - Patient survey
K. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		- 360o global rating
L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

#### **Systems-Based Practice**

ILOs	Methods of	Methods of
	teaching/ learning	Evaluation
M.Work effectively in different health care delivery settings and systems.	- Observation - Senior staff experience	- 360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care		- Check list evaluation of live or recorded performanc e
O. Advocate for quality patient care and assist patients in dealing with system complexities		- 360o global rating - Patient survey
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

# Unit 4 (Module) Thoracic trauma

## A-Knowledge and understanding

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Explain update and evidence based etiology,	-Didactic	-OSCE at
clinical picture, diagnosis and management of	(lectures,	the end of
the following common diseases and clinical	seminars,	each year
conditions:	tutorial)	-log book &
	-Clinical	portfolio
Trauma of the Chest Wall	rounds	- One MCQ
1. Thorax	-Seminars	examination
a. Rib fracture	-Clinical	at the
b. Flail chest/pulmonary contusion	rotations	second half
c. Sucking chest wounds	-Service	of the
2. Pneumothorax	teaching	second year
a. Simple		and another
b.Tension		one in the
3. Hemothorax		third year
		-Written
Tracheobronchial and Pulmonary Trauma		and oral
1. Tracheobronchial injury		examination
2. Airway control		
3. Pulmonary contusion		
4. Penetrating injury		
5. Air embolism		
Diaphragmatic Trauma		
1. Blunt trauma		
2. Penetrating trauma		
Cardiovascular Trauma		
1. Cardiac contusion		
2. Penetrating cardiovascular injuries		
a. Major vessel laceration		

b. Penetrating cardiac trauma		
c. Laceration of coronary arteries		
d. Pericardial tamponade		
3. Traumatic aortic transection		
B. Mention the principles of	-Didactic	-OSCE at
1.Use of cardiopulmonary bypass or partial	(lectures,	the end of
mechanical support	seminars,	each year
2. Management of concomitant injuries	tutorial)	-log book &
3. Postoperative management	-Clinical	portfolio
4. Possible Outcomes	rounds	- One MCQ
	-Seminars	examination
	-Clinical	at the
	rotations	second half
	-Service	of the
	teaching	second year
		and another
		one in the
		third year
		-Written
		and oral
		examination
Mention Basics of the rare Esophageal Trauma	-Didactic	-OSCE at
	(lectures,	the end of
	seminars,	each year
	tutorial)	-log book &
	-Clinical	portfolio
	rounds	- One MCQ
	-Seminars	examination
	-Clinical	at the
	rotations	second half
	-Service	of the
	teaching	second year
	333377778	and another
		one in the
		third year
		uniu yeai

	-Written and oral examination
C. Explain the facts and principles of the relevant	
basic and clinically supportive sciences related to thoracic trauma	
D. Explain the facts and principles of the relevant	
basic and clinically supportive sciences related to thoracic trauma	
E. Describe the basic ethical and medicolegal principles revenant to the thoracic trauma.	
F. Describe the basics of quality assurance to ensure good clinical care in cardiothoracic surgery.	
G. Explain the ethical and scientific principles of medical research	
H. Explain the impact of common health problems in the field of thoracic trauma on the society.	

#### **B-Intellectual outcomes**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design / present case in common problem related to thoracic trauma	-Clinical rounds -Senior staff experience	-Procedure and case presentation -Log book & Portfolio
B. Apply the basic and clinically supportive sciences which are appropriate to the thoracic trauma related conditions / problem / topics.		
C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to thoracic trauma D. Plan research projects.		
E. Write scientific papers.		
F. Lead risk management activities as a part of clinical governs including morbidity and mortality in multiple traumatized patients, fat embolism, air embolism.		
G. Plan quality improvement activities in the field of medical education and clinical practice in thoracic trauma		
H. Create / innovate plans, systems, and other issues for improvement of performance thoracic trauma.		
I. Present and defend his / her data in front of a panel of experts		
J. Formulate management plans and alternative decisions in different situations in the field of thoracic trauma		

## **C-Practical skills (Patient Care)**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to thoracic trauma.	-Didactic (lectures, seminars, tutorial) -Clinical rounds Clinical rotations (service teaching)	-OSCE at the end of each year -log book & portfolio - One MCQ examination at the second half of the second year and another one in the third year -Clinical exam
<ul> <li>B. Order the following non invasive/invasive diagnostic procedures</li> <li>X ray Chest</li> <li>CT chest</li> <li>Chest MRI</li> <li>Interventional Radiology in the Thorax: Nonvascular and Vascular Applications</li> </ul>	-Clinical round with senior staff Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list
C. Interpret the following non invasive and invasive diagnostic procedures as mentioned in C B.	-Clinical round with senior staff Observation -Post graduate	<ul><li>Procedure</li><li>presentation</li><li>Log book</li><li>Check list</li></ul>

D. Perform the following non invasive and invasive diagnostic procedures  1. Thoracocentesis 2. Thoracosc opy 3. Bronchoscopy 4. Pericardiocentesis	teaching -Hand on workshops -Perform under supervision of senior staff -Clinical round with senior staff Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list
<ul><li>E. Prescribe the following non invasive and invasive therapeutic procedures.</li><li>1. Control of bleeding in trauma patient</li><li>2.Lobectomy</li><li>3. Pneumonectomy</li><li>4. Sleeve resection</li></ul>	-Clinical round with senior staff Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list
F. Perform the following non invasive and invasive therapeutic procedures  1. Control of bleeding in trauma patient 2.Lobectomy 3. Pneumonectomy 4. Sleeve resection 5. Cardiac repair 6. Esophageal repair 7. Diaphragmatic repair	-Clinical round with senior staff Observation -Post graduate teaching -Hand on workshops -Perform under supervision of	- Procedure presentation - Log book - Check list

8. Cardiopulmonary resuscitation.	senior staff	
G. Develop and carry out patient management plans for the problems mentioned in A.A	-Clinical round with senior staff	
H. Counsel and educate patients and their family about problems mentioned in A.A including post operative care and rehabilitation.	-Clinical round with senior staff	
I. Use information technology to support patient care decisions and patient education for thoracic trauma related conditions.		
J. Provide health care services aimed at preventing nosocomial infection, post operative, morbidity, mortality.	-Clinical round with senior staff	
K. Work with health care professionals, including those from other disciplines, to provide patient-focused care.	-Clinical round with senior staff	
L. Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets.( Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)		

#### **D-General Skills**

## **Practice-Based Learning and Improvement**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology in the common problems (plan and conduct audit cycles)	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
B. Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
C. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
D. Use information technology to manage information, access on-line medical	-Simulations -Clinical	- Global rating

information; and support their own	round	-Procedure &
education	-Seminars	case
	-Lectures	presentation
	-Case	-Log book &
	presentation	Portfolios
	-Hand on	
	workshops	- Check list
E. Lead the learning of students and other	-Simulations	- Global
health care professionals.	-Clinical	rating
Treater care professionals.	round	-Procedure &
	-Seminars	case
	-Lectures	presentation
	-Case	-Log book &
	presentation	Portfolios
	-Hand on	
	workshops	- Check list

## **Interpersonal and Communication Skills**

ILOs	Methods of teaching/	Methods of Evaluation
F. Create and sustain a therapeutic and ethically sound relationship with patients	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
G. Perform the following oral communications:		
Interpretation of the results of different investigations related to thoracic trauma and discussion of different therapeutic options		
<ul><li>H. Fill the following reports:</li><li>Patients' medical reports</li><li>Operative data reports</li></ul>		
I. Work effectively with others as a member or leader of a health care team		

#### **Professionalism**

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	<ul><li>Observation</li><li>Senior staff</li><li>experience</li><li>Case taking</li></ul>	-Objective structured clinical examination - Patient survey
K. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		1. 360o global rating
L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

#### **Systems-Based Practice**

Systems-based F	lactice	
ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Work effectively in different health care delivery settings and systems.	Observation - Senior staff experience	1. 360o global rating
B. Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
C. Advocate for quality patient care and assist patients in dealing with system complexities		<ol> <li>360o global rating</li> <li>Patient survey</li> </ol>
D. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

# **Unit 5 (Module) Extracorporeal Bypass**

## A-Knowledge and understanding

ILOs	Methods of	Methods of
1203	teaching/	Evaluation
	learning	2 varaacion
A.Explain update and evidence based etiology,	-Didactic	-OSCE at the end
clinical picture, diagnosis and management of the	(lectures,	of each year
following common diseases and clinical conditions:	seminars,	-log book &
- Valvular heart disease	tutorial)	portfolio
- Ischemic heart disease	-Clinical	- One MCQ
<ul> <li>Congenital heart disease</li> </ul>	rounds	examination at
	-Seminars	the second half
	-Clinical	of the second
	rotations	year and
	-Service	another one in
	teaching	the third year
		-Written and
		oral examination
B. Mention the principles of	-Didactic	-OSCE at the end
Physiology of Extracorporeal Bypass	(lectures,	of each year
1 Mambrana avyganators	seminars,	-log book &
Membrane oxygenators     a. Physiology	tutorial)	portfolio
b. Design	-Clinical	- One MCQ
c. Complications	rounds	examination at
2. Bubble oxygenators	-Seminars	the second half
a. Physiology	-Clinical	of the second
b. Design	rotations	year and
c. Complications	-Service	another one in
3. Roller head pumps	teaching	the third year
a. Design		-Written and
b. Safety measures		oral examination
c. Complications		
I	l .	

- 4. Centrifugal pumps
- a. Mechanism and design
- b. Safety measures
- c. Complications
- 5. Extracorporeal circuits
- a. Set-up (Full Cardiopulmonary Bypass vs. left heart assist)
- b. Types of tubing, filters, hemoconcentrators
- c. Safety measures
- d. Blood and artificial surface interaction
- e. Oxygenators (types, indications, benefits, disadvantages)
- f. Venous reservoir
- g. Cardiotomy reservoir
- h. Tubing (choice of adequate internal diameter and surface treatments)
- i. Osmotic pressure, oncotic pressure (use of mannitol, albumin)
- j. Blood gas control
- 6. Perfusion solutions
- a. Prime solutions
- b. Hemodilution
- c. Blood sustitutes
- 7. Manipulation of:
- a. Flow
- b. Pressure
- c. Temperature
- Techniques of Extracorporeal Bypass
- 1. Standard cardiopulmonary bypass
- a. Routes for cannulation (arterial and venous)
- b. Types of extracorporeal circuits
- c. Monitoring
- d. Complications
- 2. Anticoagulation for cardiopulmonary bypass
- a. Heparin and other agents

- b. Monitoring
- c. Reversal
- d. Complications
- 3. Special situations
- a. Left and/or right heart bypass
- b. Profound hypothermia and circulatory arrest
- > Mechanical Support
- 1. Indications for mechanical support
- a. Deterioration of an established prospective transplant recipient
- b. Patient unable to be weaned from cardiopulmonary bypass but is a candidate for "postcardiotomy" usage or "bridging" to transplantation
- c. Acute myocardial infarction with balloondependent left heart failure
- 2. Respiratory failure
- a. Indications for ECMO
- b. Alternatives to ECMO
- Alternatives to mechanical devices
- a. Balloon pumping (left and right)
- b. Centrifugal devices
- c. Impeller devices
- d. Pulsatile devices
- e. Total artificial heart
- 4. Techniques of insertion
- a. Cardiac
- b. ECMO
- 5. Complications
- a. Blood trauma
- b. Thrombosis
- c. Bleeding
- d. Infection
- 6. Weaning the patient from support devices and the use of mechanical devices

to "bridge" to transplantation.

a. Hemodynamic parameters used in weaning from cardiac support,

criteria for weaning and rate of weaning.

b. Concept of "rehabilitation" of the bridging patient and modification of

transplantation criteria for the bridging patient.

- 7. Anticoagulation
- a. Requirements for various mechanical devices
- b. Detection of blood trauma
- c. Early detection of thrombotic problems
- Fundamentals of Coagulation Management and Blood Component Therapy
- 1. Blood characteristics
- a. Blood groups and specific antigens
- b. Cellular elements
- c. Clotting cascade
- d. Pathophysiology of clotting
- e. Drugs that affect clotting and platelet function
- 2. Hemorrhagic and thrombotic complications of cardiac surgery
- a. Diagnosis
- b. Preoperative, intraoperative, and postoperative management
- c. Heparin, Protamine
- d. Cardiac and vascular prostheses
- 3. Component therapy
- a. Packed red blood cells
- b. Fresh frozen plasma
- c. Platelets
- d. Cryoprecipitate
- e. Specific clotting factors
- 4. Blood conservation
- a. Indications for transfusion

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b. Autotransfusion		
c. Cell-plasma salvage		
d. Hemoconcentration		
e. Pharmacologic manipulation		
C. Mention basics of art of the following rare diseases and conditions    Aortic root surgery    Surgery of heart faliure	-Didactic (lectures, seminars, tutorial) -Clinical rounds -Seminars -Clinical rotations -Service teaching	-OSCE at the end of each year -log book & portfolio - One MCQ examination at the second half of the second year and another one in the third year -Written and
		oral examination
D. Explain the facts and principles of the relevant		
basic and clinically supportive sciences related to		
Extracorporeal Bypass		
E. Explain the facts and principles of the relevant		
basic and clinically supportive sciences related to		
Extracorporeal Bypass		
F. Describe the basic ethical and medicolegal		ļ
principles revenant to the Extracorporeal Bypass		
G. Describe the basics of quality assurance to ensure good clinical care in his field		
H. Explain the ethical and scientific principles of medical research		
I. Explain the impact of common health problems in the field of Extracorporeal Bypass on the society.		
	•	,

#### **B-Intellectual outcomes**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design / present case in common	-Clinical rounds	-Procedure
problem related to Extracorporeal Bypass	-Senior staff experience	and case presentation -Log book & Portfolio
B. Apply the basic and clinically supportive sciences which are appropriate to the Extracorporeal Bypass related conditions / problem / topics.		
C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Extracorporeal Bypass		
D. Plan research projects.		
E. Write scientific papers.		
F. Lead risk management activities as a part of clinical governs.		
G. Plan quality improvement activities in the field of medical education and clinical practice in Extracorporeal Bypass.		
H. Create / innovate plans, systems, and other issues for improvement of performance in his practice.		
I. Present and defend his / her data in front of a panel of experts	_	
J. Formulate management plans and alternative decisions in different situations in the field of Extracorporeal Bypass.		

## **C-Practical skills (Patient Care)**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to Extracorporeal Bypass.	-Didactic (lectures, seminars, tutorial) -Clinical rounds Clinical rotations (service teaching)	-OSCE at the end of each year -log book & portfolio - One MCQ examination at the second half of the second year and another one in the third year -Clinical exam
B. Order the following invasive diagnostic procedures  Blood gases	-Clinical round with senior staff -Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list
C. Interpret the following invasive diagnostic procedures  • Blood gases	-Clinical round with senior staff	- Procedure presentation - Log book

Blood gases  Blood gases  Staff Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff  E. Prescribe the following invasive therapeutic procedures. Extracorporeal Bypass  Extracorporeal Bypass  Extracorporeal Bypass  Extracorporeal Bypass  F. Perform the following invasive therapeutic  -Log book -Procedure with senior staff -Log book -Check list  -Procedure presentation - Log book - Check list  -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff  F. Perform the following invasive therapeutic  -Clinical round with socior  -Procedure		Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Check list
procedures. Extracorporeal Bypass  Extracorporeal Bypass  Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff  F. Perform the following invasive therapeutic  F. Perform the following invasive therapeutic  with senior staff -Clinical round with senior - Procedure - Procedure	procedures	with senior staff Observation -Post graduate teaching -Hand on workshops -Perform under supervision of	presentation - Log book
r. Perioriii tile iollowing invasive therapeutic	procedures.	with senior staff Observation -Post graduate teaching -Hand on workshops -Perform under supervision of	presentation - Log book
Staff - Log book Extracorporeal Bypass Observation - Check list	procedures	-Clinical round with senior staff	presentation - Log book

G. Develop and carry out patient management	teaching -Hand on workshops -Perform under supervision of senior staff -Clinical round
plans for the following problems  Extracorporeal Bypass	staff
H. Counsel and educate patients and their family about  Extracorporeal Bypass	-Clinical round with senior staff
I. Use information technology to support patient care decisions and patient education for Extracorporeal Bypass related conditions.	
J. Provide health care services aimed at preventing Extracorporeal Bypass	-Clinical round with senior staff
K. Work with health care professionals, including those from other disciplines, to provide patient-focused care.	-Clinical round with senior staff
L. Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets.( Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	

#### **D-General Skills**

## **Practice-Based Learning and Improvement**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology in the common problems (plan and conduct audit cycles)	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
B. Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
C. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
D. Use information technology to manage information, access on-line medical	-Simulations -Clinical	- Global rating

information; and support their own education	round	-Procedure &
	-Seminars	case
	-Lectures	presentation
	-Case	-Log book &
	presentation	Portfolios
	-Hand on	
	workshops	- Check list
E. Lead the learning of students and other	-Simulations	- Global
health care professionals.	-Clinical	rating
processorials.	round	-Procedure &
	-Seminars	case
	-Lectures	presentation
	-Case	-Log book &
	presentation	Portfolios
	-Hand on	
	workshops	- Check list

## **Interpersonal and Communication Skills**

ILOs	Methods of teaching/	Methods of Evaluation
F. Create and sustain a therapeutic and ethically sound relationship with patients	-Simulations -Clinical round -Seminars -Lectures -Case	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
G. Perform the following oral communications:		
Interpretation of the results of different		

investigations related to thoracic	
trauma and discussion of different	
therapeutic options	
H. Fill the following reports:	
<ul> <li>Patients' medical reports</li> </ul>	
Operative data reports	
I. Work effectively with others as a member or leader of a health care team	

#### **Professionalism**

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Observation - Senior staff experience -Case taking	-Objective structured clinical examination - Patient survey
K. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		1. 360o global rating
L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

ILOs	Methods of teaching/ learning	Methods of Evaluation
M.Work effectively in different health care delivery settings and systems.	-Observation - Senior staff experience	1. 360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O. Advocate for quality patient care and assist patients in dealing with system complexities		<ol> <li>3600 global rating</li> <li>Patient survey</li> </ol>
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

## **Unit 6 (Module) Minor Procedures**

## A-Knowledge and understanding

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Explain update and evidence based etiology,	-Didactic	-OSCE at
clinical picture, diagnosis and management of the	(lectures,	the end of
following common diseases and clinical conditions:	seminars,	each year
Patients undergoing minor procedures	tutorial)	-log book &
	-Clinical	portfolio
	rounds	- One MCQ
	-Seminars	examination
	-Clinical	at the
	rotations	second half
	-Service	of the
	teaching	second year
		and another
		one in the
		third year
		-Written
		and oral
		examination
B. Mention the principles of	-Didactic	-OSCE at
	(lectures,	the end of
> Bronchoscopy	seminars,	each year
	tutorial)	-log book &
a. Indications	-Clinical	portfolio
b. Patient selection	rounds	- One MCQ
c. Instrumentation	-Seminars	examination
d. Techniques under local and under general	-Clinical	at the
anesthesia	rotations	second half
e. Biopsy and brushing techniques	-Service	of the
f. Complications	teaching	second year

> Esophagoscopy		and another
		one in the
a. Indications		third year
b. Patient selection		-Written
c. Instrumentation		and oral
d. Techniques under local and under general		examination
anesthesia		
e. Biopsy and brushing techniques		
f. Complications		
> Tube Thoracostomy		
1 lindications for tube thoracostomy		
a. Pleural spaces		
b. Pleural effusions and empyema		
c. Lung parenchymal air leaks		
2. Insertion techniques		
a. Instrument placement		
b. Trocar placement		
c. Direct vision (e.g., thoracotomy)		
d. Local, regional or general anesthesia		
3. Complications		
a. Lung parenchymal injury		
b. Neurovascular intercostal injury		
c. Infection		
d. Post chest tube pneumothorax		
C. Mention bases of the following rare diseases	-Didactic	-OSCE at
and conditions	(lectures,	the end of
	seminars,	each year
Rarer diseases need bronchoscopy	tutorial)	-log book &
	-Clinical	portfolio
	rounds	- One MCQ
	-Seminars	examination
	-Clinical	at the
	rotations	second half
	-Service	of the
	teaching	second year

	and another one in the third year -Written and oral examination
D. Explain the facts and principles of the relevant	
basic and clinically supportive sciences related	
to Minor Procedures	
E. Explain the facts and principles of the relevant	
basic and clinically supportive sciences related	
to Minor Procedures	
F. Describe the basic ethical and medicolegal	
principles revenant to the Minor Procedures.	
G. Describe the basics of quality assurance to	
ensure good clinical care in his field	
H. Explain the ethical and scientific principles of	
medical research	
I. Explain the impact of common health problems	
in the field of Minor Procedures on the society.	

#### **B-Intellectual outcomes**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design and present case in common problem related to Minor Procedures	-Clinical rounds -Senior staff experience	-Procedure and case presentation -Log book & Portfolio
B. Apply the basic and clinically supportive sciences which are appropriate to the Minor Procedures related conditions / problem / topics.		
C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Minor Procedures D. Plan research projects.		
E. Write scientific papers.		
F. Lead risk management activities as a part of clinical governs.		
G. Plan quality improvement activities in the field of medical education and clinical practice in Minor Procedures.		
H. Create and innovate plans, systems, and other issues for improvement of performance in his practice.		
I. Present and defend his / her data in front of a panel of experts		
J. Formulate management plans and alternative decisions in different situations in the field of Minor Procedures.		

## **C-Practical skills (Patient Care)**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to Minor Procedures.	-Didactic (lectures, seminars, tutorial) -Clinical rounds Clinical rotations (service teaching)	-OSCE at the end of each year -log book & portfolio - One MCQ examination at the second half of the second year and another one in the third year -Clinical exam
<ul> <li>B. Order the following non invasive and invasive diagnostic procedures</li> <li>X ray Chest</li> <li>CT chest</li> <li>Chest MRI</li> <li>Interventional Radiology in the Thorax: Nonvascular and Vascular Applications</li> </ul>	-Clinical round with senior staff Observation -Post graduate teaching -Hand on workshops -Perform under supervision of senior staff	- Procedure presentation - Log book - Check list
<ul><li>C. Interpret the following non invasive and invasive diagnostic procedures</li><li>X ray Chest</li><li>CT chest</li></ul>	-Clinical round with senior staff Observation -Post graduate teaching	<ul><li>Procedure</li><li>presentation</li><li>Log book</li><li>Check list</li></ul>

Chart MADI	Hand on	
Chest MRI	-Hand on	
	workshops	
	-Perform under	
	supervision of	
	senior staff	
D. Perform the following non invasive	-Clinical round	- Procedure
and invasive diagnostic procedures	with senior staff	presentation
	Observation	- Log book
Bronchoscopy	-Post graduate	- Check list
Esophagoscopy	teaching	
	-Hand on	
	workshops	
	-Perform under	
	supervision of	
	senior staff	
E. Prescribe the following non invasive	-Clinical round	- Procedure
and invasive therapeutic	with senior staff	presentation
•	Observation	- Log book
procedures.	-Post graduate	- Check list
Dronchossony	teaching	
Bronchoscopy	-Hand on	
Esophagoscopy	workshops	
	-Perform under	
	supervision of	
	senior staff	
	-Clinical round	- Procedure
F. Perform the following non invasive	with senior staff	presentation
and invasive therapeutic procedures	Observation	•
Bronchoscopy		- Log book - Check list
Bronchoscopy	-Post graduate	- CHECK HSt
Esophagoscopy	teaching	
	-Hand on	
	workshops	
	-Perform under	
	supervision of	
	senior staff	

G. Develop and carry out patient management plans for the following problems Bronchoscopy Esophagoscopy	-Clinical round with senior staff	
H. Counsel and educate patients and their family about Bronchoscopy Esophagoscopy	-Clinical round with senior staff	
I. Use information technology to support patient care decisions and patient education for Minor Procedures related conditions.		
J. Provide health care services aimed at preventing Minor Procedures compications	-Clinical round with senior staff	
K. Work with health care professionals, including those from other disciplines, to provide patient-focused care.	-Clinical round with senior staff	
L. Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets. (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)		

#### **D-General Skills**

## **Practice-Based Learning and Improvement**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology in the common problems (plan and conduct audit cycles)	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
B. Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.	-Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating - Procedure & case presentation - Log book & Portfolios - Check list
C. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D. Use information technology to manage information, access on-line medical information; and support their own education		
E. Lead the learning of students and other health care professionals.		

## **Interpersonal and Communication Skills**

ILOs	Methods of teaching/	Methods of Evaluation
F. Create and sustain a therapeutic and ethically sound relationship with patients	learning -Simulations -Clinical round -Seminars -Lectures -Case presentation -Hand on workshops	- Global rating -Procedure & case presentation -Log book & Portfolios - Check list
G. Perform the following oral communications:		
Interpretation of the results of different investigations related to Minor Procedures and discussion of different therapeutic options		
<ul><li>H. Fill the following reports:</li><li>Patients' medical reports</li><li>Operative data reports</li></ul>		
Work effectively with others as a member or leader of a health care team		

#### **Professionalism**

ILOs	Methods of teaching/	Methods of Evaluation
	Learning	
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Observation - Senior staff experience Case taking	-Objective structured clinical examination - Patient survey
K. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		1. 360o global rating
L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

ILOs	Methods of teaching/ learning	Methods of Evaluation
M.Work effectively in different health care delivery settings and systems.	Observation - Senior staff experience	1. 360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O. Advocate for quality patient care and assist patients in dealing with system complexities		<ol> <li>3600</li> <li>global rating</li> <li>Patient</li> <li>survey</li> </ol>
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

## Course 4 Unit (Module) 7 Applied Surgical Cardiothoracic Anatomy

## A-Knowledge and understanding

ILOs	Methods of teaching/ learning	Methods of Evaluation
<ul> <li>A. mention the applied surgical cardiothoracic anatomy details of</li> <li>Chest wall.</li> <li>Pleurae</li> <li>Great Vessels in the Thorax</li> <li>Diaphragm</li> <li>Esophagus</li> <li>Thoracic inlet.</li> </ul>	-Lectures	-Written and oral examination - Log book
<ul> <li>B. describe the applied surgical cardiothoracic anatomy details of</li> <li>Tracheobroncheal tree and Lungs</li> <li>Mediastinum</li> <li>Pericardium</li> <li>Heart</li> </ul>		

#### **A-Intellectual outcomes**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Correlates the facts of anatomy with clinical reasoning, diagnosis and management of common diseases related to cardiothoracic surgery.	-Didactic (lectures, seminars, tutorial)	-Written and oral examination -Log book
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to common clinical situations related to cardiothoracic surgery		

#### **B-Practical skills**

Practical: 0 hours

#### **D-General Skills**

## **Practice-Based Learning and Improvement**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Use information technology to manage information, access on-line medical information; and support their own education	-Observation and supervision -Written and oral communication	Log book

## **Interpersonal and Communication Skills**

ILOs	Methods of	Methods of
	teaching/	Evaluation
	learning	
B. Write a report in common condition	-Clinical	-Global rating
mentioned in A.A & A.B	round	-Log book and
meneral minus and me	-Seminars	Portfolios
	-Lectures	-Check list

#### **Professionalism**

ILOs	Methods of teaching/ Learning	Methods of Evaluation
C. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	<ul><li>Observation and supervision</li><li>Written &amp; oral communication</li></ul>	- Objective structured clinical examination - Patient survey

ILOs	Methods of	Methods of
	teaching/	Evaluation
	learning	
D. Work effectively in different health care	-Observation	-360o global
delivery settings and systems.	-Senior staff experience	rating
, , ,	experience	
E. Partner with health care managers and		
health care providers to assess,		
coordinate, and improve health care and		
predict how these activities can affect		
system performance		

# Course 4 Unit (Module) 8 Applied Surgical Cardiothoracic pathology

## A-Knowledge and understanding

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Mention Principles of General Pathology of:	-Lectures	-Written and oral examination - Log book

#### **C-Intellectual outcomes**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Correlates the facts of pathology with clinical reasoning, diagnosis and management of common diseases related to cardiothoracic surgery.	-Didactic (lectures, seminars, tutorial)	-Written and oral examination -Log book
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to common clinical situations related to cardiothoracic surgery		

#### **D-Practical skills**

Practical: 0 hours

**D-General Skills** 

## **Practice-Based Learning and Improvement**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Use information technology to manage information, access on-line medical information; and support their own education	-Observation and supervision -Written and oral communication	Log book

## **Interpersonal and Communication Skills**

ILOs	Methods of teaching/ learning	Methods of Evaluation
B. Write a report in common condition mentioned in A.A &A.B		-Global rating -Log book and Portfolios -Check list

#### **Professionalism**

ILOs	Methods of teaching/ Learning	Methods of Evaluation
C. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	<ul><li>Observation and supervision</li><li>Written &amp; oral communication</li></ul>	structured clinical examination

ILOs	Methods of	Methods of
	teaching/	Evaluation
	learning	
D. Work effectively in different health care	-Observation	-360o global
delivery settings and systems.	-Senior staff experience	rating
	сирененее	
E. Partner with health care managers and		
health care providers to assess,		
coordinate, and improve health care and		
predict how these activities can affect		
system performance		

## 4. Course contents (topic s/modules/rotation Course Matrix

Time Schedule: Second part

Topic	•	Covered	d ILOs	
	Knowledge	Intellectual	Practical skill	General Skills
	Α	В	С	D
l	Jnit 1 Thoraci	c Disease		
Chest Wall	A,D-I	A-J	A-L	A-P
A. Acquired Abnormalities and Neoplasms	A,D-I	A-J	A-J	A-P
B. Congenital Abnormalities and Thoracic Outlet Syndrome	A,D-I	A-J	A-J	A-P
Lungs & Pleura	A,D-I	A-J	A-J	A-P
A. Non-Neoplastic Lung Disease	A,D-I	A-J	A-J	A-P
B. Neoplastic Lung Disease	A,D-I	A-J	A-J	A-P
<ul><li>C. Congenital Lung</li><li>Disease</li></ul>	A,D-I	A-J	A-J	A-P
D. Diseases of the Pleura	A,D-I	A-J	A-J	A-P
Diaphragm	A,D-I	A-J	A-J	A-P
D. Acquired Abnormalities	A,D-I	A-J	A-J	A-P
E. Neoplasms	A,D-I	A-J	A-J	A-P
F. Congenital Abnormalities	A,D-I	A-J	A-J	A-P
Esophagus	A,D-I	A-J	A-L	A-P
A. Congenital Abnormalities	A,D-I	A-J	A-J	A-P
B. Acquired Abnormalities	A,D-I	A-J	A-J	A-P
Neoplasms	A,D-I	A-J	A-J	A-P
<u>Lung Transplantation</u>	B,D-I	D,E,I	-	B-G,J-P

1. Indications and	B,D-I	D,E,I	-	B-G,J-P
contraindications for lung				
transplantation				
a. Patient evaluation	B,D-I	D,E,I	-	B-G,J-P
b. Patient selection	B,D-I	D,E,I	-	B-G,J-P
c. Informed consent	B,D-I	D,E,I	1	B-G,J-P
2. Immunosuppressive	B,D-I	D,E,I	-	B-G,J-P
therapy in lung				
transplantation				
a. Evaluation of therapy	B,D-I	D,E,I	-	B-G,J-P
b. Drugs	B,D-I	D,E,I	-	B-G,J-P
c. Complications	B,D-I	D,E,I	-	B-G,J-P
3. Technique of single and	B,D-I	D,E,I	-	B-G,J-P
double lung transplantation				
a. Left lung	B,D-I	D,E,I	-	B-G,J-P
b. Right lung	B,D-I	D,E,I	-	B-G,J-P
c. Extracorporeal bypass	B,D-I	D,E,I	-	B-G,J-P
techniques and indications				
for their use				
4. Donor evaluation	B,D-I	D,E,I	-	B-G,J-P
a. History	B,D-I	D,E,I	-	B-G,J-P
b. Physiology	B,D-I	D,E,I	-	B-G,J-P
c. Radiology	B,D-I	D,E,I	-	B-G,J-P
5. Donor preparation and	B,D-I	D,E,I	-	B-G,J-P
organ harvest				
a. Brain death, legal and	B,D-I	D,E,I	-	B-G,J-P
family-related issues				
b. Organ procurement and	B,D-I	D,E,I	-	B-G,J-P
preservation				
c. Pharmacologic and	B,D-I	D,E,I	-	B-G,J-P
technical aspects of donor				
lung harvest operations				
6. Pulmonary rejection	B,D-I	D,E,I	-	B-G,J-P
a. Signs and symptoms	B,D-I	D,E,I	-	B-G,J-P

b. Endobronchial biopsy	B,D-I	D,E,I	1	B-G,J-P
c. Histologic evaluation of	B,D-I	D,E,I	-	B-G,J-P
rejection				
d. Management of rejection	B,D-I	D,E,I	-	B-G,J-P
7. Immunosuppressive	B,D-I	D,E,I	-	B-G,J-P
therapy				
a. Immunosuppressive drugs	B,D-I	D,E,I	-	B-G,J-P
and their side effects				
b. Antibody therapy and side	B,D-I	D,E,I	-	B-G,J-P
effects				
c. Complications of	B,D-I	D,E,I	-	B-G,J-P
immunosuppressive therapy				
8. Outcomes	B,D-I	D,E,I	-	B-G,J-P
<u>Trachea &amp; Bronchii</u>	C-I	A-J	A-J	A-P
A. Congenital	C-I	A-J	A-J	A-P
Abnormalities				
Mediastinum & Pericardium	C-I	A-J	A-J	A-P
A.Congenital	C-I	A-J	A-J	A-P
Abnormalities of the				
Mediastinum				
<i>B.</i> Congenital	C-I	A-J	A-J	A-P
Abnormalities of the				
Pericardium				

Unit (Module) 2 Acquired Heart Disease				
Coronary Artery Disease	A,D-I	A-J	A-L	A-P
1.Assessment of patients	A,D-I	A-J	A-J	A-P
2.History and physical	A,D-I	A-J	A-J	A-P
examination				
3. Echocardiogram	A,D-I	A,B,C	A-J	A-P
5. Choice of treatment	A,D-I	A-J	A-J	A-P
Valvular Heart Disease	A,D-I	A-J	A-L	A-P
1. Assessment of patients	A,D-I	A-J	A-J	A-P

with valvular heart disease				
a. History and physical	A,D-I	A-J	A-J	A-P
examination				
b. Echocardiogram	A,D-I	A-J	A-J	A-P
c. Cardiac catheterization	A,D-I	A,B,C	A-J	A-P
data				
2. Choice of treatment	A,D-I	A-J	A-J	A-P
a. Prosthetic valves	A,D-I	A-J	A-J	A-P
b. Stented xenografts	A,D-I	A-J	-	A-P
c. Non-stented human and	A,D-I	A-J	-	A-P
xenograft valves(subcoronary				
and mini-root techniques)				
d. Autograft valves for aortic	A,D-I	A-J	-	A-P
valve replacement				
e. Valve repair	A,D-I	A-J	A-J	A-P
3. Mitral valve	A,D-I	A-J	A-J	A-P
a. Mitral stenosis	A,D-I	A-J	A-J	A-P
b. Mitral incompetence	A,D-I	A-J	A-J	A-P
4. Aortic valve	A,D-I	A-J	A-J	A-P
a. Aortic stenosis	A,D-I	A-J	A-J	A-P
b. Aortic incompetence	A,D-I	A-J	A-J	A-P
6. Tricuspid valve	A,D-I	A-J	A-J	A-P
a. Tricuspid incompetence	A,D-I	A-J	A-J	A-P
-functional incompetence	A,D-I	A-J	A-J	A-P
-endocarditis	A,D-I	A-J	A-J	A-P
d. Tricuspid stenosis	A,D-I	A-J	A-J	A-P
e. Multiple valve disease	A,D-I	A-J	A-J	A-P
f. Rheumatic heart disease	A,D-I	A-J	A-L	A-P
. Cardiac anatomy	B,D-I	D,E,I	-	B-G,J-P
a. Left and right main	B,D-I	D,E,I	-	B-G,J-P
coronary arteries				
b. Left anterior descending	B,D-I	D,E,I	-	B-G,J-P
coronary artery				
c. Circumflex coronary artery	B,D-I	D,E,I	-	B-G,J-P

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d. Right coronary artery	B,D-I	D,E,I	-	B-G,J-P
e. Coronary venous system	B,D-I	D,E,I	-	B-G,J-P
f. Left and right ventricular	B,D-I	D,E,I	-	B-G,J-P
anatomy				
2. Radiographic cardiac and	B,D-I	D,E,I	-	B-G,J-P
coronary anatomy				
a. Right anterior oblique	B,D-I	D,E,I	-	B-G,J-P
views				
b. Left anterior oblique views	B,D-I	D,E,I	-	B-G,J-P
c. Cranial view	B,D-I	D,E,I	-	B-G,J-P
d. Ventriculography	B,D-I	D,E,I	-	B-G,J-P
3. Pathologic development of	B,D-I	D,E,I	-	B-G,J-P
atherosclerotic plaque				
a. Endothelial injury	B,D-I	D,E,I	-	B-G,J-P
b. Platelet factors	B,D-I	D,E,I	-	B-G,J-P
c. Cellular factors	B,D-I	D,E,I	-	B-G,J-P
d. Serum factors	B,D-I	D,E,I	-	B-G,J-P
4. Coronary artery bypass	B,D-I	D,E,I	-	B-G,J-P
grafting				
a. Indications and Rationale	B,D-I	D,E,I	-	B-G,J-P
(knowledge of ACC/AHA				
clinical guidelines for				
bypass grafting)	B,D-I	D,E,I	-	B-G,J-P
b. Conduits (arterial and	B,D-I	D,E,I	-	B-G,J-P
venous – and familiar with				
different procurement				
techniques)	B,D-I	D,E,I	-	B-G,J-P
c. Techniques (on and off-	B,D-I	D,E,I	-	B-G,J-P
pump)				
d. Technical considerations	B,D-I	D,E,I	_	B-G,J-P
e. Myocardial protection	B,D-I	D,E,I		B-G,J-P
5. Preoperative evaluation	B,D-I	D,E,I	-	B-G,J-P
a. Symptoms of cardiac	B,D-I	D,E,I	-	B-G,J-P
ischemia				

b. Non-invasive testing	B,D-I	D,E,I	-	B-G,J-P
c. Invasive testing	B,D-I	D,E,I	-	B-G,J-P
d. Decision making	B,D-I	D,E,I	-	B-G,J-P
6. Postoperative care	B,D-I	D,E,I	-	B-G,J-P
a. Intensive care	B,D-I	D,E,I	-	B-G,J-P
b. Acute care	B,D-I	D,E,I	-	B-G,J-P
c. Long term management	B,D-I	D,E,I	-	B-G,J-P
d. Late complications	B,D-I	D,E,I	-	B-G,J-P
7. Outcome	B,D-I	D,E,I	-	B-G,J-P
a. Perioperative	B,D-I	D,E,I	-	B-G,J-P
complications				
b. Expected operative	B,D-I	D,E,I	-	B-G,J-P
mortality				
c. Long term results	B,D-I	D,E,I	-	B-G,J-P
d. Mechanisms of graft	B,D-I	D,E,I	-	B-G,J-P
stenosis development				
8. Complications of ischemic	B,D-I	D,E,I	-	B-G,J-P
heart disease				
a. Chronic mitral insufficiency	B,D-I	D,E,I	-	B-G,J-P
b. Ruptured papillary muscle	B,D-I	D,E,I	-	B-G,J-P
(non-operative and operative				
management)				
c. Ventricular septal defect	B,D-I	D,E,I	-	B-G,J-P
(non-operative and operative				
management)				
d. Cardiac rupture (non-	B,D-I	D,E,I	-	B-G,J-P
operative and operative				
management)				
e. Left ventricular aneurysm	B,D-I	D,E,I	-	B-G,J-P
9. Cardiac Transplantation	B,D-I	D,E,I	-	B-G,J-P
1. Indications and	B,D-I	D,E,I	-	B-G,J-P
contraindications for cardiac				
transplantation				
a. Patient evaluation	B,D-I	D,E,I	-	B-G,J-P

		1		
b. Patient selection	B,D-I	D,E,I	-	B-G,J-P
c. Informed consent	B,D-I	D,E,I	-	B-G,J-P
2 Immunosuppressive	B,D-I	D,E,I	-	B-G,J-P
therapy in cardiac				
transplantation				
a. Evaluation of therapy	B,D-I	D,E,I	-	B-G,J-P
b. Patient selection	B,D-I	D,E,I	-	B-G,J-P
c. Informed consent	B,D-I	D,E,I	-	B-G,J-P
2 Immunosuppressive	B,D-I	D,E,I	-	B-G,J-P
therapy in cardiac				
transplantation				
a. Evaluation of therapy	B,D-I	D,E,I	-	B-G,J-P
b. Drugs	B,D-I	D,E,I	-	B-G,J-P
c. Complications	B,D-I	D,E,I	-	B-G,J-P
3. Technique of cardiac	B,D-I	D,E,I	-	B-G,J-P
transplantation				
a. Orthotopic	B,D-I	D,E,I	-	B-G,J-P
b. Heterotopic	B,D-I	D,E,I	-	B-G,J-P
Donor preparation and organ	B,D-I	D,E,I	-	B-G,J-P
harvest				
a. Brain death, legal and	B,D-I	D,E,I	-	B-G,J-P
family-related issues				
b. Donor evaluation	B,D-I	D,E,I	-	B-G,J-P
c. Methods of organ	B,D-I	D,E,I	-	B-G,J-P
procurement and				
preservation				
5. Cardiac rejection	B,D-I	D,E,I	-	B-G,J-P
a. Signs and symptoms	B,D-I	D,E,I	-	B-G,J-P
b. Endomyocardial biopsy	B,D-I	D,E,I	-	B-G,J-P
c. Histologic evaluation	B,D-I	D,E,I	-	B-G,J-P
d. Management	B,D-I	D,E,I	-	B-G,J-P
e. Mechanical support and	B,D-I	D,E,I	-	B-G,J-P
re-transplantation				
6. Immunosuppressive	B,D-I	D,E,I	-	B-G,J-P

therapy				
a. Immunosuppressive drugs	B,D-I	D,E,I	-	B-G,J-P
and their side effects				
b. Polyclonal and monoclonal	B,D-I	D,E,I	-	B-G,J-P
antibody therapy and side				
effects				
c. Complications	B,D-I	D,E,I	1	B-G,J-P
7. Outcomes	B,D-I	D,E,I	-	B-G,J-P
10.Heart-Lung Transplantation	B,D-I	D,E,I	ı	B-G,J-P
1. Immunosuppressive	B,D-I	D,E,I	-	B-G,J-P
therapy in cardiopulmonary				
transplantation				
a. Evaluation of therapy	B,D-I	D,E,I	ı	B-G,J-P
b. Drugs	B,D-I	D,E,I	ı	B-G,J-P
c. Complications	B,D-I	D,E,I	ı	B-G,J-P
2. Technique of heart-lung	B,D-I	D,E,I	-	B-G,J-P
transplantation				
3. Donor evaluation	B,D-I	D,E,I	-	B-G,J-P
a. History	B,D-I	D,E,I	-	B-G,J-P
b. Physiology	B,D-I	D,E,I	ı	B-G,J-P
c. Radiology	B,D-I	D,E,I	ı	B-G,J-P
4. Donor preparation and	B,D-I	D,E,I	-	B-G,J-P
harvest				
a. Brain death, legal and	B,D-I	D,E,I	-	B-G,J-P
family-related issues				
b. Organ procurement and	B,D-I	D,E,I	-	B-G,J-P
preservation				
c. Pharmacologic and	B,D-I	D,E,I	-	B-G,J-P
technical aspects of donor				
heart-lung harvesting				
5. Rejection in	B,D-I	D,E,I	-	B-G,J-P
cardiopulmonary				
transplantation				
a. Signs and symptoms	B,D-I	D,E,I	-	B-G,J-P

b. Frequency of cardiac	B,D-I	D,E,I	-	B-G,J-P
rejection and indications for	,	, ,		ŕ
endomyocardial biopsy				
c. Techniques for diagnosing	B,D-I	D,E,I	-	B-G,J-P
lung rejection in the				
cardiopulmonary				
transplant patient	B,D-I	D,E,I	-	B-G,J-P
d. Histologic evaluation of	B,D-I	D,E,I	-	B-G,J-P
pulmonary rejection in the				
cardiopulmonary				
transplant patient	B,D-I	D,E,I	-	B-G,J-P
e. Management of rejection	B,D-I	D,E,I	-	B-G,J-P
in the cardiopulmonary				
transplant recipient				
6. Immunosuppressive	B,D-I	D,E,I	-	B-G,J-P
therapy				
a. Immunosuppressive drugs	B,D-I	D,E,I	-	B-G,J-P
and their side effects				
b. Monoclonal and polyclonal	B,D-I	D,E,I	-	B-G,J-P
antibody therapy and their				
side effects				
c. Complications	B,D-I	D,E,I	-	B-G,J-P
A. Myocarditis,	C-I	A-J	A-D,G-L	A-P
Cardiomyopathy,				
Hypertrophic				
Obstructive				
Cardiomyopathy,Cardia				
c Tumors				
1. Tumors	C-I	A-J	A-D,G-L	A-P
a. Types, pathology, and	C-I	A-J	A-D,G-L	A-P
difference in types and				
prevalence among children			:	
and adults	C-I	A-J	A-D,G-L	A-P
b. Location	C-I	A-J	A-D,G-L	A-P

c. Physiology	C-I	A-J	A-D,G-L	A-P
d. Primary vs. metastatic	C-I	A-J	A-D,G-L	A-P
e. Malignant pericardial	C-I	A-J	A-D,G-L	A-P
effusion				
f. Diagnostic methods	C-I	A-J	A-D,G-L	A-P
g. Treatment	C-I	A-J	A-D,G-L	A-P
h. Prognosis	C-I	A-J	A-D,G-L	A-P
2. Myocarditis	C-I	A-J	A-D,G-L	A-P
a. Pathologic changes	C-I	A-J	A-D,G-L	A-P
b. Etiologies	C-I	A-J	A-D,G-L	A-P
c. Clinical findings	C-I	A-J	A-D,G-L	A-P
d. Radiographic changes	C-I	A-J	A-D,G-L	A-P
e. Electrocardiography	C-I	A-J	A-D,G-L	A-P
f. Echocardiography	C-I	A-J	A-D,G-L	A-P
g. Treatment	C-I	A-J	A-D,G-L	A-P
h. Outcome	C-I	A-J	A-D,G-L	A-P
3. Hypertrophic	C-I	A-J	A-D,G-L	A-P
cardiomyopathy (HCM)				
(genetic issues)				
a. Pathologic changes	C-I	A-J	A-D,G-L	A-P
b. Anatomic changes	C-I	A-J	A-D,G-L	A-P
c. Pathophysiology	C-I	A-J	A-D,G-L	A-P
d. Obstructive vs. non-	C-I	A-J	A-D,G-L	A-P
obstructive				
e. Arrhythmias	C-I	A-J	A-D,G-L	A-P
f. Diagnosis	C-I	A-J	A-D,G-L	A-P
g. History and physical	C-I	A-J	A-D,G-L	A-P
examination				
1. Echocardiography	C-I	A-J	A-D,G-L	A-P
2. Cardiac catheterization	C-I	A-J	A-D,G-L	A-P
h. Mitral valve	C-I	A-J	A-D,G-L	A-P
1. Systolic anterior motion	C-I	A-J	A-D,G-L	A-P
2. Mitral regurgitation	C-I	A-J	A-D,G-L	A-P
i. Treatment				

1. Mitral valve replacement	C-I	A-J	A-D,G-L	A-P
2. Myectomy and	C-I	A-J	A-D,G-L	A-P
myotomy				
3. Pacing	C-I	A-J	A-D,G-L	A-P
4. Medical treatment	C-I	A-J	A-D,G-L	A-P
5. Catheter based septal	C-I	A-J	A-D,G-L	A-P
artery ablation				
j. Outcome	C-I	A-J	A-D,G-L	A-P
1. Complications	C-I	A-J	A-D,G-L	A-P
2. Long-term results	C-I	A-J	A-D,G-L	A-P
4. Cardiomyopathy	C-I	A-J	A-D,G-L	A-P
a. Dilated	C-I	A-J	A-D,G-L	A-P
b. Restrictive	C-I	A-J	A-D,G-L	A-P
c. Causes	C-I	A-J	A-D,G-L	A-P
d. Pathology	C-I	A-J	A-D,G-L	A-P
e. Pathophysiology	C-I	A-J	A-D,G-L	A-P
f. Diagnosis	C-I	A-J	A-D,G-L	A-P
1. Echocardiography	C-I	A-J	A-D,G-L	A-P
2. Endomyocardial biopsy	C-I	A-J	A-D,G-L	A-P
g. Clinical course	C-I	A-J	A-D,G-L	A-P
h. Treatment	C-I	A-J	A-D,G-L	A-P
i. Outcome	C-I	A-J	A-D,G-L	A-P
B. Abnormalities of the	C-I	A-J	A-D,G-L	A-P
Aorta				
1.Aortic aneurysms	C-I	A-J	A-D,G-L	A-P
(atherosclerotic, aortic				
dissections)				
a. Ascending	C-I	A-J	A-D,G-L	A-P
b. Transverse	C-I	A-J	A-D,G-L	A-P
c. Descending	C-I	A-J	A-D,G-L	A-P
d. Abdominal	C-I	A-J	A-D,G-L	A-P
2. Operative and non-	C-I	A-J	A-D,G-L	A-P
operative				
treatment(including				

pharmacologic and				
endoluminal therapy).				
a. Ascending	C-I	A-J	A-D,G-L	A-P
b. Transverse	C-I	A-J	A-D,G-L	A-P
c. Descending	C-I	A-J	A-D,G-L	A-P
d. Abdominal	C-I	A-J	A-D,G-L	A-P
3. Intramural Hematoma,	C-I	A-J	A-D,G-L	A-P
penetrating ulcer – diagnosis				
and therapy.				
C. Cardiac Arrhythmias	C-I	A-J	A-D,G-L	A-P
1. Cardiac arrhythmias	C-I	A-J	A-D,G-L	A-P
a. Atrial	C-I	A-J	A-D,G-L	A-P
b. Ventricular	C-I	A-J	A-D,G-L	A-P
2. Non-operative	C-I	A-J	A-D,G-L	A-P
management				
a. Anti-arrhythmic drugs	C-I	A-J	A-D,G-L	A-P
b. Electrical cardioversion	C-I	A-J	A-D,G-L	A-P
and pacing				
c. Catheter ablation	C-I	A-J	A-D,G-L	A-P
3. Operative management	C-I	A-J	A-D,G-L	A-P
a. AICD	C-I	A-J	A-D,G-L	A-P
b. Intraoperative mapping	C-I	A-J	A-D,G-L	A-P
and ablation				
c. Permanent pacing systems	C-I	A-J	A-D,G-L	A-P
d. Surgical treatment of atrial	C-I	A-J	A-D,G-L	A-P
tachyarrythmias				
Unit (Mod	lule) 3 Conge	nital Heart Dis	sease	
> Left-To-Right Shunts	A,D-I	A-J	A-L	A-P
1. Atrial septal defect	A,D-I	A-J	A-L	A-P
a. Clinical features	A,D-I	A-J	A-J	A-P
1. Natural history, indications	A,D-I	A,B,C	A-J	A-P
for operation				
2. Clinical signs and	A,D-I	A,B,C	A-J	A-P

symptoms, physical exam				
3. Chest x-ray and ECG	A,D-I	A-J	A-J	A-P
4. Echocardiogram and	A,D-I	A-J	A-J	A-P
cardiac catheterization				
5. Indications for surgery or	A,D-I	A-J	A-J	A-P
catheter-based repair				
b. Operative repair and	A,D-I	A-J	A-J	A-P
complications				
1. Extracorporeal bypass and	A,D-I	A-J	A-J	A-P
myocardial protection				
2. Incisions in the heart	A,D-I	A-J	A-J	A-P
3. Techniques for defect	A,D-I	A-J	A-J	A-P
closure				
4. Treatment of associated	A,D-I	A-J	A-J	A-P
anomalies (e.g., cleft mitral				
valve)				
5. Complications of closure	A,D-I	A-J	A-J	A-P
(e.g., air embolism,				
conduction				
abnormalities, residual	A,D-I	A-J	A-J	A-P
defects)				
c. Outcome	A,D-I	A-J	A-J	A-P
1. Expected operative	A,D-I	A-J	A-J	A-P
mortality				
2. Long-term results	A,D-I	A-J	A-J	A-P
3. Complications	A,D-I	A-J	A-J	A-P
2. Ventricular septal defect	A,D-I	A-J	A-L	A-P
a. Clinical features	A,D-I	A-J	A-J	A-P
1. Clinical signs and	A,D-I	A-J	A-J	A-P
symptoms, physical exam				
2. Echocardiogram and	A,D-I	A-J	A-J	A-P
cardiac catheterization				
3. Chest x-ray and ECG	A,D-I	A-J	A-J	A-P
4. Natural history	A,D-I	A-J	A-J	A-P

5. Indications,	A,D-I	A-J	A-J	A-P
contraindications, and timing	,			
of operation vs. catheter				
based repair (e.g., total	A,D-I	A-J	A-J	A-P
repair vs. pulmonary artery				
banding)				
6.Associated lesions e.g.,	A,D-I	A,B,C	A-J	A-P
coarctation, TGA				
b. Operative repair and	A,D-I	A,B,C	A-J	A-P
complications				
1. Extracorporeal bypass and	A,D-I	A-J	A-J	A-P
myocardial protection				
2. Incisions for different	A,D-I	A-J	A-J	A-P
types of defects				
3. Closure techniques (direct	A,D-I	A-J	A-J	A-P
suture vs. patch)				
4. Treatment of associated	A,D-I	A-J	A-J	A-P
anomalies (e.g., atrial septal				
defect,				
right ventricular muscle	A,D-I	A-J	A-J	A-P
bands)				
5. Complications (rhythm	A,D-I	A-J	A-J	A-P
disturbances, residual				
defects, and their				
management, air embolism)	A,D-I	A-J	A-J	A-P
6. Techniques of PA banding	A,D-I	A-J	A-J	A-P
c. Outcomes	A,D-I	A-J	A-J	A-P
1. expected operative	A,D-I	A-J	A-J	A-P
mortality				
2. long-term results	A,D-I	A-J	A-J	A-P
3. complications	A,D-I	A-J	A-J	A-P
3. Patent ductus arteriosus	A,D-I	A-J	A-L	A-P
a. Diagnosis and clinical	A,D-I	A-J	A-J	A-P
features				

1. Symptoms and physical findings	A,D-I	A-J	A-J	A-P
Echocardiogram and cardiac catheterization	A,D-I	A-J	A-J	A-P
3. Chest x-ray and ECG	A,D-I	A-J	A-J	A-P
4. Natural history (neonate vs. older child, endocarditis)	A,D-I	A-J	A-J	A-P
5. Medical treatment vs. surgical, indications for closure (surgical vs.	A,D-I	A-J	A-J	A-P
catheter based)	A,D-I	A-J	A-J	A-P
6. associated anomalies (e.g., ductus-dependent conditions)	A,D-I	A-J	A-J	A-P
b. Operative repair and complications	A,D-I	A-J	A-J	A-P
1. Operative techniques for simple ductus	A,D-I	A,B,C	A-J	A-P
2. Management of the difficult ductus	A,D-I	A,B,C	A-J	A-P
3. Complications of operative repair	A,D-I	A-J	A-J	A-P
c. Outcome	A,D-I	A-J	A-J	A-P
1. Expected operative mortality	A,D-I	A-J	A-J	A-P
2. Long-term results	A,D-I	A-J	A-J	A-P
3. Complications	A,D-I	A-J	A-J	A-P
4. Atrioventricular septal defect	A,D-I	A-J	A-L	A-P
a. Diagnosis and clinical features	A,D-I	A-J	A-J	A-P
Symptoms and signs     (infant vs. older patient,     physical exam)	A,D-I	A-J	A-J	A-P

2. Echocardiogram,	A,D-I	A-J	A-J	A-P
angiocardiogram, cardiac				
catheterization				
3. Chest x-ray and ECG	A,D-I	A-J	A-J	A-P
4. Natural history	A,D-I	A-J	A-J	A-P
(development of				
Eisenmenger's syndrome)				
5. Indications for and timing	A,D-I	A-J	A-J	A-P
of operation (size of shunt,				
endocarditis risk, total repair	A,D-I	A-J	A-J	A-P
vs. pulmonary artery				
banding)				
b. Operative repair and	A,D-I	A-J	A-J	A-P
complications				
1. Cardiopulmonary bypass	A,D-I	A-J	A-J	A-P
and myocardial protection				
2. Incisions in the heart	A,D-I	A-J	A-J	A-P
3. Operative techniques	A,D-I	A-J	A-J	A-P
4. Complications and their	A,D-I	A-J	A-J	A-P
management (residual				
defects, residual				
cleft "mitral valve"	A,D-I	A-J	A-J	A-P
insufficiency, heart block)				
c. Outcome	A,D-I	A-J	A-J	A-P
1. Expected operative	A,D-I	A-J	A-J	A-P
mortality				
2. Long-term results	A,D-I	A-J	A-J	A-P
3. Complications	A,D-I	A,B,C	A-J	A-P
	A,D-I	A,B,C	A-J	A-P
> Cyanotic Anomalies	A,D-I	A-J	A-L	A-P
1. Tetralogy of Fallot	A,D-I	A-J	A-L	A-P
a. Clinical features	A,D-I	A-J	A-J	A-P
1. Symptoms and physical	A,D-I	A-J	A-J	A-P
findings				

2. Cardiac catheterization, echocardiogram, angiocardiogram	A,D-I	A-J	A-J	A-P
3. Chest x-ray, ECG	A,D-I	A-J	A-J	A-P
4. Natural history	A,D-I	A-J	A-J	A-P
5. Indications for and timing OF operation (pink vs. blue TOF)	A,D-I	A-J	A-J	A-P
b. Operative repair and complications	A,D-I	A-J	A-J	A-P
1. Role of systemic-to- pulmonary artery shunt vs. total repair	A,D-I	A-J	A-J	A-P
2. Types of aortic-to- pulmonary artery shunts	A,D-I	A-J	A-J	A-P
3. Extracorporeal bypass and myocardial protection	A,D-I	A-J	A-J	A-P
4. Ventricular septal defect closure by transventricular or	A,D-I	A-J	A-J	A-P
transatrial approach	A,D-I	A-J	A-J	A-P
5. Techniques for relief of right ventricular outflow tract	A,D-I	A-J	A-J	A-P
obstruction and indications for transannular patching	A,D-I	A-J	A-J	A-P
6. Indications for conduit repair	A,D-I	A-J	A-J	A-P
7. Anatomic considerations (abnormal coronary anatomy, small PA's,	A,D-I	A-J	A-J	A-P
MAPCA's)	A,D-I	A-J	A-J	A-P
c. Outcome	A,D-I	A-J	A-J	A-P
1. Expected operative mortality	A,D-I	A-J	A-J	A-P
2. Long-term results	A,D-I	A-J	A-J	A-P

3. Complications	A,D-I	A,B,C	A-J	A-P
4. Late pulmonary	A,D-I	A,B,C	A-J	A-P
artery/valve				
replacement/reoperation				
(percutaneous interventions)	A,D-I	A-J	A-J	A-P
2. Transposition of the great	A,D-I	A-J	A-L	A-P
vessels (TGA)				
a. Clinical features	A,D-I	A-J	A-J	A-P
1. Symptoms and physical	A,D-I	A-J	A-J	A-P
findings	A D I	Λ.Ι.	A 1	A D
2. Echocardiogram, angiocardiogram, cardiac	A,D-I	A-J	A-J	A-P
catheterization				
3. Chest x-ray, ECG	A,D-I	A-J	A-J	A-P
4. Natural history, role of	A,D-I	A-J	A-J	A-P
balloon atrial septostomy	Α,υ ι			
5. Indications for and timing	A,D-I	A-J	A-J	A-P
of operations	,			
b. Operative repair and	A,D-I	A-J	A-J	A-P
complications				
1. Technique open atrial	A,D-I	A-J	A-J	A-P
septectomy				
2. Cardiopulmonary bypass	A,D-I	A-J	A-J	A-P
and myocardial protection				
3. Operative techniques for	A,D-I	A-J	A-J	A-P
total repair (Mustard,				
Senning, arterial				
switch, Rastelli)	A,D-I	A-J	A-J	A-P
4. Palliative operations (PA	A,D-I	A-J	A-J	A-P
band, systemic-to-pulmonary				
artery				
shunt)	A,D-I	A-J	A-J	A-P
c. Outcome	A,D-I	A-J	A-J	A-P
1. Expected operative	A,D-I	A-J	A-J	A-P

mortality				
2. Long-term results	A,D-I	A-J	A-J	A-P
3. Complications	A,D-I	A-J	A-J	A-P
4. Arrhythmias after atrial	A,D-I	A-J	A-J	A-P
repairs				
5. Semilunar insufficiency, PA	A,D-I	A-J	A-J	A-P
stenosis, coronary problems				
after				
arterial switch	A,D-I	A-J	A-J	A-P
6. Conduit obstruction after	A,D-I	A,B,C	A-J	A-P
Rastelli				
Obstructive Anomalies	A,D-I	A,B,C	A-L	A-P
1. Aortic stenosis	A,D-I	A-J	A-L	A-P
a. Clinical features	A,D-I	A-J	A-J	A-P
1. Symptoms and physical	A,D-I	A-J	A-J	A-P
findings				
2. Cardiac catheterization,	A,D-I	A-J	A-J	A-P
echocardiogram,				
angiocardiogram				
3. Chest x-ray, ECG	A,D-I	A-J	A-J	A-P
4. Natural history	A,D-I	A-J	A-J	A-P
5. Indications for and timing	A,D-I	A-J	A-J	A-P
of operation				
b. Operative repair and	A,D-I	A-J	A-J	A-P
complications				
1. Extracorporeal bypass,	A,D-I	A-J	A-J	A-P
myocardial protection				
2. Operative techniques	A,D-I	A-J	A-J	A-P
3. Pros and cons of various	A,D-I	A-J	A-J	A-P
techniques and patch				
configurations				
for supravalvular stenosis	A,D-I	A-J	A-J	A-P
4. Techniques of aortic	A,D-I	A-J	A-J	A-P
valvotomy				

		1		T
5. Operations to enlarge the	A,D-I	A-J	A-J	A-P
aortic annulus (e.g., Konno-				
Rastan				
procedure, Ross procedure)	A,D-I	A-J	A-J	A-P
6. Technique of apical aortic	A,D-I	A-J	A-J	A-P
conduit				
7. Myomectomy and	A,D-I	A-J	A-J	A-P
myotomy for subaortic				
obstruction				
c. Outcome	A,D-I	A-J	A-J	A-P
1. Expected operative	A,D-I	A-J	A-J	A-P
mortality				
2. Long-term results	A,D-I	A-J	A-J	A-P
3. Complications	A,D-I	A-J	A-J	A-P
2. Pulmonary stenosis	A,D-I	A-J	A-L	A-P
a. Clinical features	A,D-I	A,B,C	A-J	A-P
1. Symptoms and physical	A,D-I	A,B,C	A-J	A-P
findings				
2. Echocardiogram,	A,D-I	A-J	A-J	A-P
angiocardiogram, cardiac				
catheterization				
3. Chest x-ray, ECG	A,D-I	A-J	A-J	A-P
4. Natural history; role of	A,D-I	A-J	A-J	A-P
balloon valvuloplasty				
5. Indications for and timing	A,D-I	A-J	A-J	A-P
of operation				
b. Operative repair and	A,D-I	A-J	A-J	A-P
complications				
1. Extracorporeal bypass,	A,D-I	A-J	A-J	A-P
myocardial protection				
2. Incisions in the heart and	A,D-I	A-J	A-J	A-P
great vessels				
3. Operative considerations	A,D-I	A-J	A-J	A-P
(technique of valvulotomy,				

indications				
for transannular patching,	A,D-I	A-J	A-J	A-P
division of right ventricular				
muscle				
bands)	A,D-I	A-J	A-J	A-P
4. Complications (residual	A,D-I	A-J	A-J	A-P
obstruction)				
c. Outcome	A,D-I	A-J	A-J	A-P
1. Expected operative	A,D-I	A-J	A-J	A-P
mortality				
2. Long-term results	A,D-I	A-J	A-J	A-P
3. Complications	A,D-I	A-J	A-J	A-P
3. Coarctation of the aorta	A,D-I	A-J	A-J	A-P
a. Clinical features	A,D-I	A-J	A-J	A-P
1. Symptoms and physical	A,D-I	A-J	A-J	A-P
findings (neonate with a				
closing ductus				
vs. older infant and child)	A,D-I	A-J	A-J	A-P
2. Echocardiogram,	A,D-I	A-J	A-J	A-P
angiogram, cardiac				
catheterization				
3. Chest x-ray, ECG	A,D-I	A-J	A-J	A-P
4. Natural history	A,D-I	A-J	A-J	A-P
5. Indications for and timing	A,D-I	A,B,C	A-J	A-P
of operation vs. catheter				
based				
intervention	A,D-I	A,B,C	A-J	A-P
6. Role of prostaglandins in	A,D-I	A-J	A-J	A-P
stabilizing neonates				
7. Effect of associated	A,D-I	A-J	A-J	A-P
anomalies (e.g., patent				
ductus arteriosus,				
aortic stenosis, ventricular	A,D-I	A-J	A-J	A-P
septal defect)				

b. Operative repair and	A,D-I	A-J	A-J	A-P
complications				
1. Methods of repair (end-to-	A,D-I	A-J	A-J	A-P
end vs. patch vs. subclavian				
angioplasty)	A,D-I	A-J	A-J	A-P
2. Methods of arch	A,D-I	A-J	A-J	A-P
reconstruction				
3. Complications (residual	A,D-I	A-J	A-J	A-P
obstruction, paraplegia,				
chylothorax GI				
reperfusion syndromes)	A,D-I	A-J	A-J	A-P
4. Role of extracorporeal	A,D-I	A-J	A-J	A-P
bypass or use				
c. Outcome	A,D-I	A-J	A-J	A-P
1. Expected operative	A,D-I	A-J	A-J	A-P
mortality				
2. Long-term results	A,D-I	A-J	A-J	A-P
3. Complications	A,D-I	A-J	A-J	A-P
4. Re-coarctation and the	A,D-I	A-J	A-J	A-P
role of balloon angioplasty				
> Cardiopulmonary Bypass for	B,D-I	D,E,I	-	B-G,J-P
Operations on Congenital Cardiac Anomalies				
1. Monitoring for	B,D-I	D,E,I	_	B-G,J-P
cardiopulmonary bypass	ו ט,ט	D,L,I		0 0,3 1
a. Arterial pressure lines	B,D-I	D,E,I	_	B-G,J-P
b. Central venous pressure,	B,D-I	D,E,I	_	B-G,J-P
pulmonary artery pressure	5,5 1	<i>D, L,</i> 1		5 3,3 1
c. Temperature monitoring	B,D-I	D,E,I	_	B-G,J-P
(nasopharyngeal,	2,2 1			
esophageal, rectal, bladder)				
d. O2 saturation, end-tidal	B,D-I	D,E,I	-	B-G,J-P
CO2	- <b>,-</b> .	_ ,_,.		- 2,7
e. Urine output	B,D-I	D,E,I	-	B-G,J-P
2. Cannulation	B,D-I	D,E,I	-	B-G,J-P

a. Single venous (indications,	B,D-I	D,E,I	-	B-G,J-P
technique)				
b. Double venous	B,D-I	D,E,I	-	B-G,J-P
(indications, technique)				
c. Arterial (technique)	B,D-I	D,E,I	-	B-G,J-P
d. Venting (indications,	B,D-I	D,E,I	-	B-G,J-P
technique)				
e. Cardioplegia	B,D-I	D,E,I	-	B-G,J-P
3. Myocardial preservation	B,D-I	D,E,I	-	B-G,J-P
techniques				
a. Crystalloid, blood	B,D-I	D,E,I	-	B-G,J-P
b. Cold, warm	B,D-I	D,E,I	-	B-G,J-P
c. Antegrade, retrograde	B,D-I	D,E,I	-	B-G,J-P
d. Additives	B,D-I	D,E,I	-	B-G,J-P
e. Fibrillation	B,D-I	D,E,I	1	B-G,J-P
4. Profound hypothermia and	B,D-I	D,E,I	-	B-G,J-P
total circulatory arrest				
a. Indications	B,D-I	D,E,I	-	B-G,J-P
b. Advantages, disadvantages	B,D-I	D,E,I	-	B-G,J-P
c. Safe duration of total	B,D-I	D,E,I	-	B-G,J-P
circulatory arrest				
d. Early cerebral	B,D-I	D,E,I	-	B-G,J-P
complications				
e. Late intellectual,	B,D-I	D,E,I	-	B-G,J-P
neurological, psychiatric				
outcome				
c. Complications	B,D-I	D,E,I	-	B-G,J-P
Principles of	B,D-I	D,E,I	-	B-G,J-P
Postoperative Care				
1. Preoperative assessment	B,D-I	D,E,I	-	B-G,J-P
and preparation				
a. Clinical and diagnostic data	B,D-I	D,E,I	-	B-G,J-P
b. Physical examination	B,D-I	D,E,I	-	B-G,J-P
2. Expected postoperative	B,D-I	D,E,I	-	B-G,J-P

B-G,J-P B-G,J-P B-G,J-P B-G,J-P
B-G,J-P B-G,J-P B-G,J-P
B-G,J-P B-G,J-P
B-G,J-P
B-G,J-P
B-G,J-P
,
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B-G,J-P
B-G,J-P
B-G,J-P
B-G,J-P
A-P
A-P
A-P
A-P
A-P
A-P
A-P
A-P
A-P
A-P
A-P
A-P

and myocardial protection				
3. Approach to each	C-I	A-J	A-J	A-P
anatomic subtype and				
placement of incisions				
in the heart	C-I	A-J	A-J	A-P
4. Specific operative	C-I	A-J	A-J	A-P
techniques (e.g., suturing,				
placement of				
patches)	C-I	A-J	A-J	A-P
5. Complications and their	C-I	A-J	A-J	A-P
management				
c. Outcome	C-I	A-J	A-J	A-P
1. Expected operative	C-I	A-J	A-J	A-P
mortality				
2. Long-term results	C-I	A-J	A-J	A-P
3. Complications	C-I	A-J	A-J	A-P
2. Aorto-pulmonary window	C-I	A-J	A-J	A-P
a. Clinical features	C-I	A-J	A-J	A-P
1. Natural history	C-I	A-J	A-J	A-P
(development of pulmonary				
vascular obstructive				
disease)	C-I	A-J	A-J	A-P
2. Symptoms and signs	C-I	A-J	A-J	A-P
3. Echocardiogram,	C-I	A-J	A-J	A-P
angiocardiogram, cardiac				
catheterization				
4. Chest x-ray, ECG	C-I	A-J	A-J	A-P
5. Indications for surgery	C-I	A-J	A-J	A-P
b. Operative repair	C-I	A-J	A-J	A-P
c. Outcome	C-I	A-J	A-J	A-P
1. Expected operative	C-I	A-J	A-J	A-P
mortality				
2. Long-term results	C-I	A-J	A-J	A-P
3. Complications	C-I	A-J	A-J	A-P

1. Truncus arteriosus 2. C-I 3. Clinical features 3. C-I 4. A-J 4. A-J 4. A-P 4. A-P 1. Symptoms and physical findings 2. Cardiac catheterization, echocardiogram, angiocardiogram 3. Chest x-ray, ECG 4. Natural history (development of pulmonary vascular obstructive disease) 5. Indications for and timing of operation b. Operative repair and complications 1. Extracorporeal bypass and myocardial protection 2. Operative techniques C-I A-J A-J A-P A-P C-Onduits (composite, xenograft and homograft) - Modifications required for types II and III truncus 3. Techniques for repair of associated anomalies c. Outcome C-I A-J A-J A-P A-P A-P C-I A-J A-J A-P	Cyanotic Anomalies	C-I	A-J	A-J	A-P
1. Symptoms and physical findings 2. Cardiac catheterization, echocardiogram, angiocardiogram 3. Chest x-ray, ECG 4. Natural history (development of pulmonary vascular obstructive disease) 5. Indications for and timing of operation b. Operative repair and complications 1. Extracorporeal bypass and myocardial protection 2. Operative techniques - Conduits (composite, xenograft and homograft) - Modifications required for types II and III truncus 3. Techniques for repair of associated anomalies c. Outcome 1. Expected operative mortality 2. Long-term results C-I A-J A-J A-P	1. Truncus arteriosus	C-I	A-J	A-J	A-P
findings  2. Cardiac catheterization, echocardiogram, angiocardiogram  3. Chest x-ray, ECG  4. Natural history (development of pulmonary vascular obstructive disease)  5. Indications for and timing of operation  b. Operative repair and complications  1. Extracorporeal bypass and myocardial protection  2. Operative techniques  - Conduits (composite, xenograft and homograft)  - Modifications required for types II and III truncus  3. Techniques for repair of associated anomalies  c. Outcome  C-I A-J A-J A-P  A-J A-P	a. Clinical features	C-I	A-J	A-J	A-P
2. Cardiac catheterization, echocardiogram, angiocardiogram 3. Chest x-ray, ECG 4. Natural history (development of pulmonary vascular obstructive disease) 5. Indications for and timing of operation b. Operative repair and complications 1. Extracorporeal bypass and myocardial protection 2. Operative techniques - Conduits (composite, xenograft and homograft) - Modifications required for types II and III truncus 3. Techniques for repair of associated anomalies c. Outcome  C-I A-J A-P A-J A-P A-P A-P A-J A-P A-P A-J A-P A-P A-P A-J A-P		C-I	A-J	A-J	A-P
4. Natural history (development of pulmonary vascular obstructive  disease) C-I A-J A-J A-P  5. Indications for and timing of operation b. Operative repair and complications 1. Extracorporeal bypass and myocardial protection 2. Operative techniques C-I A-J A-P	2. Cardiac catheterization, echocardiogram,	C-I	A-J	A-J	A-P
4. Natural history (development of pulmonary vascular obstructive  disease) C-I A-J A-J A-P  5. Indications for and timing of operation b. Operative repair and complications 1. Extracorporeal bypass and myocardial protection 2. Operative techniques C-I A-J A-P	3. Chest x-ray, ECG	C-I	A-J	A-J	A-P
5. Indications for and timing of operation b. Operative repair and complications 1. Extracorporeal bypass and myocardial protection 2. Operative techniques - Conduits (composite, composite, composite) - Modifications required for types II and III truncus 3. Techniques for repair of associated anomalies c. Outcome  C-I A-J A-J A-P  A-P  A-P  A-P  A-P  A-P  A-P  A-P	(development of pulmonary	C-I	A-J	A-J	A-P
of operation  b. Operative repair and complications  1. Extracorporeal bypass and myocardial protection  2. Operative techniques  - Conduits (composite, composite, composite)  - Modifications required for types II and III truncus  3. Techniques for repair of associated anomalies  c. Outcome  C-I A-J A-J A-P  1. Expected operative mortality  2. Long-term results  C-I A-J A-J A-P  A-P  4. Conduit replacement long-term	disease)	C-I	A-J	A-J	A-P
complications  1. Extracorporeal bypass and myocardial protection  2. Operative techniques  - Conduits (composite, composite, composite)  - Modifications required for types II and III truncus  3. Techniques for repair of associated anomalies  c. Outcome  C-I  A-J  A-J  A-P  A-P  A-P  A-P  A-P  A-P		C-I	A-J	A-J	A-P
1. Extracorporeal bypass and myocardial protection 2. Operative techniques C-I A-J A-P Conduits (composite, composite, composite) A-J A-P A-P A-D A-P	•	C-I	A-J	A-J	A-P
- Conduits (composite, xenograft and homograft) - Modifications required for types II and III truncus 3. Techniques for repair of associated anomalies c. Outcome C-I A-J A-P A-P A-P A-P A-P A-P  1. Expected operative mortality 2. Long-term results C-I A-J A-P	• • • • • • • • • • • • • • • • • • • •	C-I	A-J	A-J	A-P
xenograft and homograft)  - Modifications required for types II and III truncus  3. Techniques for repair of associated anomalies  c. Outcome  C-I  A-J  A-J  A-P  A-P  1. Expected operative mortality  2. Long-term results  C-I  A-J  A-J  A-P  A-P  A-P  A-P  A-P  A-P	2. Operative techniques	C-I	A-J	A-J	A-P
- Modifications required for types II and III truncus  3. Techniques for repair of associated anomalies  c. Outcome  C-I  A-J  A-J  A-P  A-P  A-P  A-P  A-P  A-P	· · ·	C-I	A-J	A-J	A-P
3. Techniques for repair of associated anomalies  c. Outcome  1. Expected operative mortality  2. Long-term results  3. Complications  4. Conduit replacement long-term	•	C-I	A-J	A-J	A-P
1. Expected operative C-I A-J A-P mortality 2. Long-term results C-I A-J A-J A-P 3. Complications C-I A-J A-J A-P 4. Conduit replacement long-term	3. Techniques for repair of	C-I	A-J	A-J	A-P
mortality  2. Long-term results  C-I A-J A-P  3. Complications C-I A-J A-J A-P  4. Conduit replacement long-term	c. Outcome	C-I	A-J	A-J	A-P
3. Complications C-I A-J A-P 4. Conduit replacement long- term C-I A-J A-J A-P	•	C-I	A-J	A-J	A-P
3. Complications C-I A-J A-P 4. Conduit replacement long- term C-I A-J A-J A-P	2. Long-term results	C-I	A-J	A-J	A-P
term	3. Complications	C-I	A-J	A-J	A-P
2. Tricuspid atresia C-I A-J A-P	,	C-I	A-J	A-J	A-P
	2. Tricuspid atresia	C-I	A-J	A-J	A-P

	1		•	
a. Clinical features	C-I	A-J	A-J	A-P
1. Symptoms and physical	C-I	A-J	A-J	A-P
findings				
2. Echocardiogram,	C-I	A-J	A-J	A-P
angiocardiogram, cardiac				
catheterization				
3. Chest x-ray, ECG	C-I	A-J	A-J	A-P
4. Natural history, role of	C-I	A-J	A-J	A-P
balloon atrial septostomy				
5. Indications for and timing	C-I	A-J	A-J	A-P
of operation				
6. Role of palliative	C-I	A-J	A-J	A-P
operations (systemic-				
pulmonary artery shunts,				
PA banding, bidirectional	C-I	A-J	A-J	A-P
Glenn, Fontan, other right				
heart				
bypass operations)	C-I	A-J	A-J	A-P
b. Operative repair and	C-I	A-J	A-J	A-P
complications				
1. Palliative operations	C-I	A-J	A-J	A-P
2. Operations for right heart	C-I	A-J	A-J	A-P
bypass (bidirectional Glenn,				
Fontan)				
c. Outcome	C-I	A-J	A-J	A-P
1. Expected operative	C-I	A-J	A-J	A-P
mortality				
2. Long-term results	C-I	A-J	A-J	A-P
3. Complications	C-I	A-J	A-J	A-P
3. Total anomalous	C-I	A-J	A-J	A-P
pulmonary venous				
connection				
a. Clinical features	C-I	A-J	A-J	A-P
1. Symptoms and physical	C-I	A-J	A-J	A-P

findings				
2. Cardiac catheterization,	C-I	A-J	A-J	A-P
echocardiogram,				
angiocardiogram				
3. Chest x-ray, ECG	C-I	A-J	A-J	A-P
4. Natural history	C-I	A-J	A-J	A-P
5. Indications for and timing	C-I	A-J	A-J	A-P
of operation				
b. Operative repair and	C-I	A-J	A-J	A-P
complications				
1. Extracorporeal bypass,	C-I	A-J	A-J	A-P
myocardial protection				
2. Operative techniques for	C-I	A-J	A-J	A-P
different subtypes				
c. Outcome	C-I	A-J	A-J	A-P
1. Expected operative	C-I	A-J	A-J	A-P
mortality				
2. Long-term results	C-I	A-J	A-J	A-P
3. Complications	C-I	A-J	A-J	A-P
4. Ebstein's anomaly	C-I	A-J	A-J	A-P
a. Clinical features	C-I	A-J	A-J	A-P
1. Symptoms and physical	C-I	A-J	A-J	A-P
findings				
2. Cardiac catheterization,	C-I	A-J	A-J	A-P
echocardiogram,				
angiocardiogram				
3. Chest x-ray, ECG	C-I	A-J	A-J	A-P
4. Natural history	C-I	A-J	A-J	A-P
5. Associated lesions (e.g.,	C-I	A-J	A-J	A-P
Wolf-Parkinson-White				
syndrome)				
6. Indications for and timing	C-I	A-J	A-J	A-P
of operation				
b. Operative repair and	C-I	A-J	A-J	A-P

complications				
1. Extracorporeal bypass and	C-I	A-J	A-J	A-P
myocardial protection				
2. Technique of tricuspid	C-I	A-J	A-J	A-P
repair, obliteration of				
atrialized ventricle				
3. Technique of tricuspid	C-I	A-J	A-J	A-P
valve replacement				
c. Outcome	C-I	A-J	A-J	A-P
1. Expected operative	C-I	A-J	A-J	A-P
mortality				
2. Long-term results	C-I	A-J	A-J	A-P
3. Complications	C-I	A-J	A-J	A-P
	C-I	A-J	A-J	A-P
Obstructive Anomalies	C-I	A-J	A-J	A-P
1. Interrupted aortic arch	C-I	A-J	A-J	A-P
a. Clinical features	C-I	A-J	A-J	A-P
1. Symptoms and physical	C-I	A-J	A-J	A-P
findings				
2. Echocardiogram,	C-I	A-J	A-J	A-P
angiocardiogram, cardiac				
catheterization				
3. Chest x-ray, ECG	C-I	A-J	A-J	A-P
4. Natural history	C-I	A-J	A-J	A-P
5. Indications for and timing	C-I	A-J	A-J	A-P
of operation				
6. The role of prostaglandins	C-I	A-J	A-J	A-P
in preoperative stabilization				
7. DiGeorge syndrome	C-I	A-J	A-J	A-P
(hypocalcemia, need for				
irradiated blood)				
b. Operative repair and	C-I	A-J	A-J	A-P
complications				
1. Extracorporeal bypass,	C-I	A-J	A-J	A-P

hypothermic arrest, regional cerebral				
Perfusion	C-I	A-J	A-J	A-P
2. Median sternotomy vs. left thoracotomy	C-I	A-J	A-J	A-P
3. Techniques (e.g., end-to- end anastomosis, interposition	C-I	A-J	A-J	A-P
grafting, absorbable vs. nonabsorbable sutures)	C-I	A-J	A-J	A-P
4. Complications (e.g., residual obstruction, recurrent laryngeal	C-I	A-J	A-J	A-P
nerve injury, chylothorax)	C-I	A-J	A-J	A-P
5. Repair of associated anomalies	C-I	A-J	A-J	A-P
c. Outcome	C-I	A-J	A-J	A-P
1. Expected operative mortality	C-I	A-J	A-J	A-P
2. Long-term results	C-I	A-J	A-J	A-P
3. Complications	C-I	A-J	A-J	A-P
4. Reoperation	C-I	A-J	A-J	A-P
5. Management of DiGeorge syndrome	C-I	A-J	A-J	A-P
2. Vascular ring	C-I	A-J	A-J	A-P
a. Clinical features	C-I	A-J	A-J	A-P
1. Signs and symptoms	C-I	A-J	A-J	A-P
2. Barium esophagogram, CT scan, MRI	C-I	A-J	A-J	A-P
b. Operative repair and complications	C-I	A-J	A-J	A-P
1. Techniques for exposure by left thoracotomy, indications for	C-I	A-J	A-J	A-P

other approaches	C-I	A-J	A-J	A-P
2. Technique for correction	C-I	A-J	A-J	A-P
of each type				
3. Role of aortopexy	C-I	A-J	A-J	A-P
4. Complications (e.g.,	C-I	A-J	A-J	A-P
recurrent laryngeal nerve				
paralysis,				
chylothorax, residual	C-I	A-J	A-J	A-P
tracheomalacia)				
c. Outcome	C-I	A-J	A-J	A-P
1. Expected operative	C-I	A-J	A-J	A-P
mortality				
2. Long-term results	C-I	A-J	A-J	A-P
3. Complications	C-I	A-J	A-J	A-P
4. Residual tracheomalacia	C-I	A-J	A-J	A-P
Miscellaneous Anomalies	C-I	A-J	A-J	A-P
1. Preoperative evaluation	C-I	A-J	A-J	A-P
and diagnosis				
2. Operative strategies and	C-I	A-J	A-J	A-P
complications				
3. Outcome	C-I	A-J	A-J	A-P
Unit 4	4 (Module) Th	oracic trauma	)	
> Trauma of the Chest Wall	A,D-I	A-J	A-L	A-P
1. Thorax	A,D-I	A-J	A-J	A-P
a. Rib fracture	A,D-I	A-J	A-J	A-P
b. Flail chest/pulmonary	A,D-I	A-J	A-J	A-P
contusion				
c. Sucking chest wounds	A,D-I	A-J	A-J	A-P
2. Pneumothorax	A,D-I	A-J	A-J	A-P
a. Simple	A,D-I	A-J	A-J	A-P
b.Tension	A,D-I	A-J	A-J	A-P
3. Hemothorax	A,D-I	A-J	A-J	A-P
a. Diagnosis	A,D-I	A-J	A-J	A-P

b. Operative and non-	A,D-I	A-J	A-J	A-P
operative management				
Tracheobronchial and	A,D-I	A-J	A-L	A-P
Pulmonary Trauma				
1. Tracheobronchial injury	A,D-I	A-J	A-J	A-P
a. Signs and symptoms	A,D-I	A-J	A-J	A-P
b. Radiologic findings	A,D-I	A-J	A-J	A-P
c. Diagnosis and	A,D-I	A-J	A-J	A-P
management				
2. Airway control	A,D-I	A-J	A-J	A-P
a. Intubation	A,D-I	A-J	A-J	A-P
b. Bronchoscopy	A,D-I	A-J	A-J	A-P
c. Emergency tracheostomy	A,D-I	A-J	A-J	A-P
d. One-lung ventilation	A,D-I	A-J	A-J	A-P
e. High-frequency ventilation	A,D-I	A-J	A-J	A-P
3. Pulmonary contusion	A,D-I	A-J	A-J	A-P
a. Signs and symptoms	A,D-I	A-J	A-J	A-P
b. Pathophysiology	A,D-I	A-J	A-J	A-P
c. Radiologic findings	A,D-I	A-J	A-J	A-P
d. Operative and non-	A,D-I	A-J	A-J	A-P
operative management				
4. Penetrating injury	A,D-I	A-J	A-J	A-P
a. Signs and symptoms	A,D-I	A-J	A-J	A-P
b. Indications for operation	A,D-I	A-J	A-J	A-P
c. Management of peripheral	A,D-I	A-J	A-J	A-P
injuries				
d. Management of hilar	A,D-I	A-J	A-J	A-P
injuries				
e. Air embolism	A,D-I	A-J	A-J	A-P
Diaphragmatic Trauma	A,D-I	A-J	A-L	A-P
1. Blunt trauma	A,D-I	A-J	A-J	A-P
a. Signs and symptoms	A,D-I	A-J	A-J	A-P
b. Radiologic findings	A,D-I	A-J	A-J	A-P
c. Indication for operation	A,D-I	A-J	A-J	A-P

d. Operative approach	A,D-I	A-J	A-J	A-P
e. Techniques of repair	A,D-I	A-J	A-J	A-P
f. Delayed presentation	A,D-I	A-J	A-J	A-P
g. Associated injuries	A,D-I	A-J	A-J	A-P
2. Penetrating trauma	A,D-I	A-J	A-J	A-P
a. Signs and symptoms	A,D-I	A-J	A-J	A-P
b. Radiologic findings	A,D-I	A-J	A-J	A-P
c. Operative approaches and	A,D-I	A-J	A-J	A-P
techniques of repair				
Cardiovascular Trauma	A,D-I	A-J	A-L	A-P
1. Cardiac contusion	A,D-I	A-J	A-J	A-P
a. Pathophysiology	A,D-I	A-J	A-J	A-P
b. Noninvasive diagnostic	A,D-I	A-J	A-J	A-P
techniques				
c. Management	A,D-I	A-J	A-J	A-P
d. Pericardial tamponade	A,D-I	A-J	A-J	A-P
e. Diagnostic methods	A,D-I	A-J	A-J	A-P
f. Management	A,D-I	A-J	A-J	A-P
1. Operative approaches for	A,D-I	A-J	A-J	A-P
specific injuries				
2. Traumatic aortic	A,D-I	A-J	A-J	A-P
transection				
a. Pathophysiology	A,D-I	A-J	A-J	A-P
b. Anatomic locations and	A,D-I	A-J	A-J	A-P
operative approaches				
c. Operative and non-	A,D-I	A-J	A-J	A-P
operative management				
d. Role of endovascular	A,D-I	A-J	A-J	A-P
therapy				
e. Management of associated	A,D-I	A-J	A-J	A-P
injuries				
f. Outcomes	A,D-I	A-J	A-J	A-P
1.Use of cardiopulmonary	B,D-I	D,E,I	-	B-G,J-P
bypass or partial mechanical				

	-	-	_	
support				
2. Management of	B,D-I	D,E,I	-	B-G,J-P
concomitant injuries				
3. Postoperative	B,D-I	D,E,I	-	B-G,J-P
management				
4. Outcomes	B,D-I	D,E,I	-	B-G,J-P
Esophageal Trauma	C-I	A-J	A-L	A-P
1. Esophageal trauma	C-I	A-J	A-J	A-P
a. Signs and symptoms	C-I	A-J	A-J	A-P
b. Radiologic assessment	C-I	A-J	A-J	A-P
(e.g., plain radiographs, CT				
scans, contrast				
studies)	C-I	A-J	A-J	A-P
2. Methods of repair	C-I	A-J	A-J	A-P
a. Primary repair	C-I	A-J	A-J	A-P
b. Resection and	C-I	A-J	A-J	A-P
reconstruction				
c. Diversion	C-I	A-J	A-J	A-P
3. Complications	C-I	A-J	A-J	A-P
a. Esophageal leak	C-I	A-J	A-J	A-P
b. Esophageal obstruction	C-I	A-J	A-J	A-P
c. Management	C-I	A-J	A-J	A-P
Unit 5 (M	Iodule) Extra	corporeal By	pass	
- Valvular heart disease	A,D-I	A-J	A-L	A-P
- Ischemic heart disease	A,D-I	A-J	A-L	A-P
- Congenital heart	A,D-I	A-J	A-L	A-P
disease				
Physiology of	B,D-I	D,E,I	-	B-G,J-P
Extracorporeal Bypass				
1. Membrane oxygenators	B,D-I	D,E,I	-	B-G,J-P
a. Physiology	B,D-I	D,E,I	-	B-G,J-P
b. Design	B,D-I	D,E,I	-	B-G,J-P
c. Complications	B,D-I	D,E,I	-	B-G,J-P

2. Bubble oxygenators	B,D-I	D,E,I	1	B-G,J-P
a. Physiology	B,D-I	D,E,I	1	B-G,J-P
b. Design	B,D-I	D,E,I	1	B-G,J-P
c. Complications	B,D-I	D,E,I	1	B-G,J-P
3. Roller head pumps	B,D-I	D,E,I	1	B-G,J-P
a. Design	B,D-I	D,E,I	1	B-G,J-P
b. Safety measures	B,D-I	D,E,I	1	B-G,J-P
c. Complications	B,D-I	D,E,I	1	B-G,J-P
4. Centrifugal pumps	B,D-I	D,E,I	-	B-G,J-P
a. Mechanism and design	B,D-I	D,E,I	-	B-G,J-P
b. Safety measures	B,D-I	D,E,I	-	B-G,J-P
c. Complications	B,D-I	D,E,I	1	B-G,J-P
5. Extracorporeal circuits	B,D-I	D,E,I	1	B-G,J-P
a. Set-up (Full	B,D-I	D,E,I	-	B-G,J-P
Cardiopulmonary Bypass vs.				
left heart assist)				
b. Types of tubing, filters,	B,D-I	D,E,I	-	B-G,J-P
hemoconcentrators				
c. Safety measures	B,D-I	D,E,I	-	B-G,J-P
d. Blood and artificial surface	B,D-I	D,E,I	-	B-G,J-P
interaction				
e. Oxygenators (types,	B,D-I	D,E,I	-	B-G,J-P
indications, benefits,				
disadvantages)				
f. Venous reservoir	B,D-I	D,E,I	-	B-G,J-P
g. Cardiotomy reservoir	B,D-I	D,E,I	-	B-G,J-P
h. Tubing (choice of adequate	B,D-I	D,E,I	-	B-G,J-P
internal diameter and surface				
treatments)				
i. Osmotic pressure, oncotic	B,D-I	D,E,I	-	B-G,J-P
pressure (use of mannitol,				
albumin)				
j. Blood gas control	B,D-I	D,E,I	-	B-G,J-P
6. Perfusion solutions	B,D-I	D,E,I	-	B-G,J-P

a. Prime solutions	B,D-I	D,E,I	-	B-G,J-P
b. Hemodilution	B,D-I	D,E,I	-	B-G,J-P
c. Blood substitutes	B,D-I	D,E,I	-	B-G,J-P
7. Manipulation of:	B,D-I	D,E,I	-	B-G,J-P
a. Flow	B,D-I	D,E,I	-	B-G,J-P
b. Pressure	B,D-I	D,E,I	-	B-G,J-P
c. Temperature	B,D-I	D,E,I	-	B-G,J-P
Techniques of	B,D-I	D,E,I	-	B-G,J-P
Extracorporeal Bypass				
1. Standard cardiopulmonary	B,D-I	D,E,I	A-J	B-G,J-P
bypass				
a. Routes for cannulation	B,D-I	D,E,I	-	B-G,J-P
(arterial and venous)				
b. Types of extracorporeal	B,D-I	D,E,I	-	B-G,J-P
circuits				
c. Monitoring	B,D-I	D,E,I	-	B-G,J-P
d. Complications	B,D-I	D,E,I	-	B-G,J-P
2. Anticoagulation for	B,D-I	D,E,I	-	B-G,J-P
cardiopulmonary bypass				
a. Heparin and other agents	B,D-I	D,E,I	-	B-G,J-P
b. Monitoring	B,D-I	D,E,I	-	B-G,J-P
c. Reversal	B,D-I	D,E,I	_	B-G,J-P
d. Complications	B,D-I	D,E,I	_	B-G,J-P
3. Special situations	B,D-I	D,E,I	-	B-G,J-P
a. Left and/or right heart	B,D-I	D,E,I	-	B-G,J-P
bypass				
b. Profound hypothermia and	B,D-I	D,E,I	-	B-G,J-P
circulatory arrest				
Mechanical Support	B,D-I	D,E,I	-	B-G,J-P
1. Indications for mechanical	B,D-I	D,E,I	-	B-G,J-P
support				
a. Deterioration of an	B,D-I	D,E,I	-	B-G,J-P
established prospective				
transplant recipient				

b. Patient unable to be weaned from cardiopulmonary bypass but is a candidate for	B,D-I	D,E,I	-	B-G,J-P
"postcardiotomy" usage or "bridging" to transplantation				
c. Acute myocardial	B,D-I	D,E,I	-	B-G,J-P
infarction with balloon-				
dependent left heart failure	D D I	DEL		
2. Respiratory failure	B,D-I	D,E,I	-	B-G,J-P
a. Indications for ECMO	B,D-I	D,E,I	-	B-G,J-P
b. Alternatives to ECMO	B,D-I	D,E,I	-	B-G,J-P
3. Alternatives to mechanical	B,D-I	D,E,I	-	B-G,J-P
devices	5.5.1	5.5.1		D C   D
<ul><li>a. Balloon pumping (left and right)</li></ul>	B,D-I	D,E,I	-	B-G,J-P
b. Centrifugal devices	B,D-I	D,E,I	1	B-G,J-P
c. Impeller devices	B,D-I	D,E,I	1	B-G,J-P
d. Pulsatile devices	B,D-I	D,E,I	-	B-G,J-P
e. Total artificial heart	B,D-I	D,E,I	1	B-G,J-P
4. Techniques of insertion	B,D-I	D,E,I	1	B-G,J-P
a. Cardiac	B,D-I	D,E,I	1	B-G,J-P
b. ECMO	B,D-I	D,E,I	-	B-G,J-P
5. Complications	B,D-I	D,E,I	-	B-G,J-P
a. Blood trauma	B,D-I	D,E,I	-	B-G,J-P
b. Thrombosis	B,D-I	D,E,I	1	B-G,J-P
c. Bleeding	B,D-I	D,E,I	-	B-G,J-P
d. Infection	B,D-I	D,E,I	-	B-G,J-P
6. Weaning the patient from	B,D-I	D,E,I	-	B-G,J-P
support devices and the use				
of mechanical devices to				
"bridge" to transplantation.				
a. Hemodynamic parameters	B,D-I	D,E,I	-	B-G,J-P
used in weaning from cardiac				

support, criteria for weaning and rate of weaning.  b. Concept of "rehabilitation" B,D-I	D,E,I		
	DFI		
I h Concont of "robabilitation"   PDI	DFI		
·	<i>□</i> , □, ı	-	B-G,J-P
of the bridging patient and			
modification of			
transplantation criteria for			
the bridging patient.			
7. Anticoagulation B,D-I	D,E,I	-	B-G,J-P
a. Requirements for various B,D-I	D,E,I	-	B-G,J-P
mechanical devices			
b. Detection of blood trauma B,D-I	D,E,I	-	B-G,J-P
c. Early detection of B,D-I	D,E,I	-	B-G,J-P
thrombotic problems			
➤ Fundamentals of B,D-I	D,E,I	-	B-G,J-P
Coagulation Management			
and Blood Component			
Therapy			
1. Blood characteristics B,D-I	D,E,I	-	B-G,J-P
a. Blood groups and specific B,D-I	D,E,I	-	B-G,J-P
antigens			
b. Cellular elements B,D-I	D,E,I	-	B-G,J-P
c. Clotting cascade B,D-I	D,E,I	-	B-G,J-P
d. Pathophysiology of clotting B,D-I	D,E,I	-	B-G,J-P
e. Drugs that affect clotting B,D-I	D,E,I	-	B-G,J-P
and platelet function			
2. Hemorrhagic and B,D-I	D,E,I	-	B-G,J-P
thrombotic complications of			
cardiac surgery			
a. Diagnosis B,D-I	D,E,I	-	B-G,J-P
b. Preoperative, B,D-I	D,E,I	-	B-G,J-P
intraoperative, and			
postoperative management			
c. Heparin, Protamine B,D-I	D,E,I	-	B-G,J-P
d. Cardiac and vascular B,D-I	D,E,I	-	B-G,J-P

prostheses				
3. Component therapy	B,D-I	D,E,I	1	B-G,J-P
a. Packed red blood cells	B,D-I	D,E,I	1	B-G,J-P
b. Fresh frozen plasma	B,D-I	D,E,I	1	B-G,J-P
c. Platelets	B,D-I	D,E,I	1	B-G,J-P
d. Cryoprecipitate	B,D-I	D,E,I	1	B-G,J-P
e. Specific clotting factors	B,D-I	D,E,I	1	B-G,J-P
4. Blood conservation	B,D-I	D,E,I	-	B-G,J-P
a. Indications for transfusion	B,D-I	D,E,I	1	B-G,J-P
b. Autotransfusion	B,D-I	D,E,I	1	B-G,J-P
c. Cell-plasma salvage	B,D-I	D,E,I	1	B-G,J-P
d. Hemoconcentration	B,D-I	D,E,I	1	B-G,J-P
e. Pharmacologic	B,D-I	D,E,I	-	B-G,J-P
manipulation				
Aortic root surgery	C-I	A-J	A-J	A-P
Surgery of heart faliure	C-I	A-J	A-J	A-P
Unit 6	(Module) Mir	nor Procedur	es	
> Bronchoscopy	B,D-I	D,E,I	A-L	B-G,J-P
a. Indications	B,D-I	D,E,I	-	B-G,J-P
b. Patient selection	B,D-I	D,E,I	-	B-G,J-P
c. Instrumentation	B,D-I	D,E,I	-	B-G,J-P
d. Techniques under local	B,D-I	D,E,I	A-J	B-G,J-P
and under general anesthesia				
e. Biopsy and brushing	B,D-I	D,E,I	A-J	B-G,J-P
techniques				
f. Complications	B,D-I	D,E,I	-	B-G,J-P
Esophagoscopy	B,D-I	D,E,I	A-L	B-G,J-P
a. Indications	B,D-I	D,E,I	-	B-G,J-P
b. Patient selection	B,D-I	D,E,I	-	B-G,J-P
c. Instrumentation	B,D-I	D,E,I	-	B-G,J-P
d. Techniques under local	B,D-I	D,E,I	A-J	B-G,J-P
and under general anesthesia				
e. Biopsy and brushing	B,D-I	D,E,I	A-J	B-G,J-P

techniques				
f. Complications	B,D-I	D,E,I	-	B-G,J-P
> Tube Thoracostomy	B,D-I	D,E,I	-	B-G,J-P
1 indications for tube	B,D-I	D,E,I	-	B-G,J-P
thoracostomy				
a. Pleural spaces	B,D-I	D,E,I	-	B-G,J-P
b. Pleural effusions and	B,D-I	D,E-J	-	B-G,J-P
empyema				
c. Lung parenchymal air leaks	B,D-I	D,E,I	-	B-G,J-P
2. Insertion techniques	B,D-I	D,E,I	A-J	B-G,J-P
a. Instrument placement	B,D-I	D,E,I	A-J	B-G,J-P
b. Trocar placement	B,D-I	D,E,I	-	B-G,J-P
c. Direct vision (e.g.,	B,D-I	D,E,I	A-J	B-G,J-P
thoracotomy)				
d. Local, regional or general	B,D-I	D,E,I	A-J	B-G,J-P
anesthesia				
3. Complications	B,D-I	D,E,I	-	B-G,J-P
a. Lung parenchymal injury	B,D-I	D,E,I	-	B-G,J-P
b. Neurovascular intercostal	B,D-I	D,E,I	-	B-G,J-P
injury				
c. Infection	B,D-I	D,E,I	-	B-G,J-P
d. Post chest tube	B,D-I	D,E,I	-	B-G,J-P
pneumothorax				
Course 4 Unit (Module	7 Applied S	urgical Cardio	thoracic Anat	omy
Chest wall.	A	A.B	-	A-E
Pleurae	A	A.B	-	A-E
Great Vessels in the Thorax	A	A.B	-	A-E
Diaphragm	A	A.B	-	A-E
Esophagus	A	A.B	-	A-E
Thoracic inlet.	A	A.B	-	A-E
Tracheobroncheal tree and	В	A.B	-	A-E
Lungs				
Mediastinum	В	A.B		A-E

Pericardium	В	A.B	-	A-E
Heart	В	A.B	-	A-E
Course 4 Unit (Module)	8 Applied Su	urgical Cardio	thoracic patho	ology
Cell Injury, Cell Death	A	A.B	-	A-E
Acute and Chronic	A	A.B	-	A-E
Inflammation				
Tissue Repair: Regeneration,	A	A.B	-	A-E
Healing, and Fibrosis				
Immunity & hypersensitivity	A	A.B	1	A-E
Bacterial infection.	A	A.B	ı	A-E
Disturbance of growth	A	A.B	1	A-E
Pathology of tumors	A	A.B	1	A-E
Respiratory system	В	A.B	-	A-E
Pathology.				
Heart, cardiac valves, and	В	A.B	-	A-E
coronary arteries.				
The great Vessels	В	A.B	-	A-E
The chest wall and pleural	В	A.B	-	A-E
Cavity				
Mediastinal pathology	В	A.B	-	A-E

### 5. Course methods of teaching/learning:

- 1. Didactic (lectures, seminars, tutorial)
- 2. Outpatient
- 3. Inpatient
- 4. Clinical rounds
- 5. Clinical rotations
- 6. Service teaching
- 7. Direct observation
- 8. Post graduate teaching
- 9. Hand on workshops
- 10. Perform under supervision of senior staff
- 11. Simulations

- 12. Present a case (true or simulated) in a grand round
- 13. Case Taking
- 14. journal club,
- 15. Critically appraised topic,
- 16. Educational prescription
- 17. Observation & supervision
- 18. Written & oral communications

# 6. Course methods of teaching/learning: for students with poor achievements

- Extra Didactic (lectures, seminars, tutorial) according to their needs
- 2. Extra training according to their needs

### 7. Course assessment methods:

### i. Assessment tools:

- Clinical examination
- Written
- Oral examination
- Check list
- log book & portfolio
- > Procedure/case presentation
- One MCQ examination in f the second year and one in the third year
- Objective structured clinical examination
- > Check list evaluation of live or recorded performance
- Record review (report)
- > Patient survey
- ➤ 360o global rating
- ii. Time schedule: At the end of the second part
- iii. Marks: 1000 marks

### 8. List of references

### i. Lectures notes

- Course notes
- Staff members print out of lectures and/or CD copies

### ii. Essential books

- Sellke Frank W., Nido Pedro J., Swanson Scott J.SABISTON SPENCER Cardiothoracic Surgery, Ninth edition, Elsevier Health Sciences. 10 Dec. 2004
- Yuh David, Vricella Luca, Baumgartner William. Johns Hopkins Textbook of Cardiothoracic Surgery, Second Edition, McGraw-Hill Education / Medical.
- 5 Feb. 2014
- Shields Thomas W., Locicero Joseph, Colson Yolonda L. Shields' General Thoracic Surgery, Eighth edition, Lippincott Williams and Wilkins. 25 Jun. 2018
- Kouchoukos Nicholas T., Blackstone Eugene H., Hanley Frank L., Kirklin James K. Kirklin/Barratt-Boyes Cardiac Surgery, Elsevier Health Sciences, Fouth edition. 9 Nov. 2012
- Mery Carlos M., Turek Joseph W.TSRA Review of Cardiothoracic Surgery, Elsevier Health Sciences01 Aug 2011

### iii. Recommended books

- Cohn, L.H., *Cardiac Surgery in the Adult, Third Edition*, New York, McGraw-Hill, 2008.
- Yuh, D.D., Vricella, L.A., Baumgartner, W.A., (eds), *The Johns Hopkins Manual of Cardiothoracic Surgery*, New York, McGraw-Hill, 2007.
- Kaiser, Larry R.; Kron, Irving L.; Spray, Thomas L. *Mastery of Cardiothoracic Surgery*, 2nd Edition Lippincott Williams & Wilkins, 2007

- J Stark M. de Leval and VT Tsang, Surgery for Congenital heart defects, Third Edition, West Sussex, John Wiley & Sons Ltd, 2006.
- McMinn R.M.H. (1994): Lasts anatomy regional and applied chapter 7; ninth edition, edited by Longman group UK.
- Rosai and Ackerman's Surgical Pathology Juan Rosai, Mosby 2004
- Sternberg's Diagnostic surgical Pathology 4th edition, Lippincott Williams and Wilkins
- v. Periodicals, Web sites, ... etc

### > Periodicals:

- Annual of Thoracic Surgery
- Multimedia Manual of Cardiothoracic Surgery
- European Journal of Cardiothoracic Surgery
- Journal of Thoracic and Cardiovascular Surgery
- Interactive Cardiovascular and Thoracic Surgery
- Asian Cardiovascular & Thoracic Annals
- BMJ
- Egyptian Journal of cardiothoracic surgery
- American Journal of Anatomy
- British journal of anatomy
- Human pathology
- Histopathology
- American Journal of surgical pathology
- Web Sites: <a href="http://www.ncbi.nlm.nih.gov/pubmed/">http://www.ncbi.nlm.nih.gov/pubmed/</a>
  http://www.innerbody.com

### v. Others

## 9. Signatures

Course Coordinator:	Head of the Department:	
	•••••	
Date:	Date:	

# ANNEX 2 Program Academic Reference Standards (ARS)

1- Graduate attributes for medical doctorate in Cardiothoracic
Surgery

# The Graduate (after residence training and medical doctorate years of study) must:

- **1-** Demonstrate competency and mastery of basics, methods and tools of scientific research and clinical audit in *Cardiothoracic Surgery*.
- **2-** Have continuous ability to add knowledge to *Cardiothoracic Surgery* through research and publication.
- **3-** Appraise and utilise relevant scientific knowledge to continuously update and improve clinical practice.
- **4-** Acquire excellent level of medical knowledge in the basic biomedical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in patient care and scientific research.
- **5-** Function as a leader of a team to provide patient care that is appropriate, effective and compassionate for dealing with health problems and health promotion.
- **6-** Identify and create solutions for health problems in *Cardiothoracic Surgery.*
- **7-** Acquire an in depth understanding of common areas of *Cardiothoracic Surgery*, from basic clinical care to evidence

- based clinical application, and possession of required skills to manage independently all problems in these areas.
- 8- Demonstrate leadership competencies including interpersonal and communication skills that ensure effective information exchange with individual patients and their families and teamwork with other health professions, the scientific community and the public.
- **9-** Function as teacher in relation to colleagues, medical students and other health professions.
- **10-** Master decision making capabilities in different situations related to *Cardiothoracic Surgery*.
- 11- Show leadership responsiveness to the larger context of the health care system, including e.g. the organisation of health care, partnership with health care providers and managers, practice of cost-effective health care, health economics, and resource allocations.
- 12- Demonstrate in depth awareness of public health and health policy issues including independent ability to improve health care, and identify and carryout systembased improvement of care.
- 13- Show model attitudes and professionalism.
- **14-** Demonstrate commitment for lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages and in *Cardiothoracic Surgery* or one of its subspecialties.
- **15-** Use recent technologies to improve his practice in *Cardiothoracic Surgery*.
- **16-** Share in updating and improving clinical practice in *Cardiothoracic Surgery*.

# 2- Competency based Standards for medical doctorate in Cardiothoracic Surgery.

### 22.1- Knowledge and understanding

# By the end of the program, the graduate should demonstrate satisfactory knowledge and understanding of

- **2-1-A-** Established, updated and evidence- based theories, basics and developments of *Cardiothoracic Surgery* and relevant sciences.
- **2-1-B-** Basics, methods and ethics of medical research.
- **2-1-C-** Ethical and medicolegal principles of medical practice related to *Cardiothoracic Surgery*.
- **2-1-D-** Principles and measurements of quality in *Cardiothoracic Surgery.*
- **2-1-E-** Principles and efforts for maintainace and improvements of public health.

### 2- Intellectual skills

# By the end of the program, the graduate should be able to demonstrate the following

- **2-2-A-** Application of basic and other relevant science to solve *Cardiothoracic Surgery.* related Problems.
- 2-2-B- Problem solving based on available data.
- **2-2-C** Involvement in research studies related to *Cardiothoracic Surgery*.
- 2-2-D- Writing scientific papers.
- 2-2-E- Risk evaluation in the related clinical practice.
- **2-2-F-** Planning for performance improvement in *Cardiothoracic Surgery*.
- **2-2-G-** Creation and innovation in *Cardiothoracic Surgery*.
- **2-2-H-** Evidence based discussion.
- **2-2-I-** Decision making in different situations related to *Cardiothoracic Surgery.*

### 2.3- Clinical skills

By the end of the program, the graduate should be able to Competency-based outcomes for Patient Care:-

- **2-3-A-** MD students must be able to provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health extensive level means in depth understanding and from basic science to evidence based clinical application and possession of skills to manage independently all problems in *Cardiothoracic Surgery*.
- **2-3-B-** Master patient care relevant to Cardiothoracic surgery for patients with all diagnoses and procedures.
- **2-3-C** Write and evaluate reports for situations related to the *Cardiothoracic Surgery.*

### 2.4- General skills

By the end of the program, the graduate should be able to

Competency-based outcomes for Practice-based Learning
and Improvement

- **2-4-A-**Master practice-based learning and improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, improvements in patient care and risk management
- **2-4-B-** Use competently all information sources and technology to improve his practice.
- 2-4-C- Master skills of teaching and evaluating others.
  - Competency-based objectives for Interpersonal and Communication Skills
- **2-4-D**-Master interpersonal and communication skills that result in effective information exchange and teaming with patients, their families, and other health professionals.

### Competency-based objectives for Professionalism

- **2-4-E**-Master Professionalism behavior, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.
  - **Less Competency-based objectives for Systems-based Practice:**
- **2-4-F**-Demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively use system resources to provide care that is of optimal value.
- 2-4-G- Participate in improvement of the education system.
- **2-4-H-** Demonstrate skills of leading scientific meetings including time management
- 2-4-O- Demonstrate skills of self and continuous learning.

# Annex 3, Methods of teaching/learning

### Annex 3, Methods of teaching/learning

	Patient care	knowledge	based	and communicati	Professionalis m	Systems- based practice
Didactic (lectures, seminars, tutorial)	X	X		X	X	Х
journal club,	Х	Х	Х			
Educational prescription	Х	Х	Х	X	Х	Х
Present a case (true or simulated) in a grand round		X	X	X	X	
Observation and supervision	Х		Х	Х	Х	Х
conferences		Х	Х	Х		Х
Written assignments	Х	Х	Х	X	Х	Х
Oral assignments	Х	Х	Х	X	X	Х

### Teaching methods for knowledge

- Didactic (lectures, seminars, tutorial)
- journal club
- Critically appraised topic
- Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues).
- Present a case (true or simulated) in a grand round
- Others

### Teaching methods for patient care

- Observation and supervision /Completed tasks procedure/case logs
- On-the-job" training without structured teaching is not sufficient for this skill (checklists).
- Simulation is increasingly used as an effective method for skill/teamwork training.

### **Teaching methods for other skills**

- Written communication (e.g., orders, progress note, transfer note, discharge summary, operative reports, and diagnostic reports).
- Oral communication (e.g., presentations, transfer of care, interactions with patients, families, colleagues, members of the health care team) and/or non verbal skills (e.g., listening, team skills)
- Professionalism, including medical ethics, may be included as a theme throughout the program curriculum that includes

both didactic and experiential components (e.g., may be integrated into already existing small group discussions of vignettes or case studies and role plays, computer-based modules) and may be modeled by the faculty in clinical practice and discussed with the resident as issues arise during their clinical practice.

# Annex 4, Assessment methods

# Annex 4, ILOs evaluation methods for MD students.

Method	Practic al skills	K	Intellect ual		Gener	al skills	
	Patient care	K	_	based learning/	Interperso nal and communic ation skills		Systems- based practice
Record review	Х	X	X		X	X	Х
Checklist	Х				Х		
Global rating	Х	Χ	Х	Х	Х	Х	Х
Simulations	Х	Х	Х	Х	Х	Х	
Portfolios	Х	Х	Х	Х	X		
Standardized oral examination	Х	Х	Х	Х	Х		Х
Written examination	Х	X	Х	Х			Х
Procedure/ case log	Х	Х					
OSCE	X	X	X	X	Х	X	Х

## Annex 4, Glossary of MD students assessment methods

- Record Review Abstraction of information from patient records, such as medications or tests ordered and comparison of findings against accepted patient care standards.
- Chart Stimulated Recall Uses the MD doctor's patient records in an oral examination to assess clinical decisionmaking.
- Mini clinical evaluation: Evaluation of Live/Recorded Performance (single event) – A single resident interaction with a patient is evaluated using a checklist. The encounter may be videotaped for later evaluation.
- Standardized Patients (SP) Simulated patients are trained to respond in a manner similar to real patients. The standardized patient can be trained to rate MD doctor's performance on checklists and provide feedback for history taking, physical examination, and communication skills. Physicians may also rate the MD doctor's performance.
- ❖ Objective Structured Clinical Examination (OSCE) A series of stations with standardized tasks for the MD doctors to perform. Standardized patients and other assessment methods often are combined in an OSCE. An observer or the standardized patient may evaluate the MD doctors.
- Procedure or Case Logs MD doctors prepare summaries of clinical experiences including clinical data. Logs are useful to document educational experiences and deficiencies.

- ❖ PSQs Patients fill out Patient Survey questionnaires (PSQs) evaluating the quality of care provided by MD doctors.
- Case /problems assess use of knowledge in diagnosing or treating patients or evaluate procedural skills.
- Models: are simulations using mannequins or various anatomic structures to assess procedural skills and interpret clinical findings. Both are useful to assess practice performance and provide constructive feedback.
- ❖ 360 Global Rating Evaluations MD doctors, faculty, nurses, clerks, and other clinical staff evaluate MD doctors from different perspectives using similar rating forms.
- ❖ Portfolios A portfolio is a set of project reports that are prepared by the MD doctors to document projects completed during the MD study years. For each type of project standards of performance are set. Example projects are summarizing the research literature for selecting a treatment option, implementing a quality improvement program, revising a medical student clerkship elective, and creating a computer program to track patient care and outcomes.
- Examination MCQ A standardized examination using multiple-choice questions (MCQ). The in-training examination and written board examinations are examples.
- ❖ Examination Oral Uses structured realistic cases and patient case protocols in an oral examination to assess clinical decision-making.
- ❖ Procedure or Case Logs MD doctors prepare summaries of clinical experiences including clinical data. Logs are useful to document educational experiences and deficiencies.
- PSQs Patients fill out Patient Survey questionnaires (PSQs) evaluating the quality of care provided by MD doctors.

# Annex 5, program evaluation tools

By whom	Method	sample
Quality Assurance	Reports	#
Unit	Field visits	
External Evaluator	Reports	#
(s):According to	Field visits	
department council		
External Examiner		
(s): According to		
department council		
Stakeholders	Reports	#
	Field visits	
	questionnaires	
Senior students	questionnaires	#
Alumni	questionnaires	#

# Annex 6, program Correlations:

مصفوفة توافق المعايير القومية القياسية العامة لبرامج الدكتوراه مع المعايير الأكاديمية  $\Box$ المعتمدة من كلية الطب  $\Box$  جامعة أسيوط لدرجة الدكتوراه في جراحة القلب و الصدر

# I- General Academic Reference Standards (GARS) versus Program ARS

## 1- Graduate attributes

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
1- Demonstrate competency and mastery of basics, methods and tools of scientific research and clinical audit in Cardiothoracic Surgery.	1 البحث العلمي منهجيات البحث العلمي
2- Have continuous ability to add knowledge new developments to Cardiothoracic Surgery through research and publication.	2-العمل المستمر علي الإضافة للمعارف في مجال التخصص
3- Appraise and utilise scientific knowledge to continuously update and improve clinical practice and relevant basic sciences.	3-تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
4- Acquire excellent level of medical knowledge in the basic biomedical, clinical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in patient care and scientific	4-دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا و مطورا للعلاقات البينية بينها
5- Function as a leader of a team to provide patient care that is appropriate, compassionate for dealing with effective and health Problems and health promotion. 7- Acquire an in depth understanding of	5-إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
common areas of speciality, from basic clinical care to evidence based clinical application, and possession of skills to manage independently all problems in these areas.	
6- Identify and create solutions for health problems in Cardiothoracic Surgery.	6-تحديد المشكلات المهنية و إيجاد حلولا مبتكرة لحلها
5- Function as a leader of a team to provide patient care that is appropriate,	7-إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص

effective and compassionate for dealing with health problems and health promotion.  7- Acquire an in depth understanding of common areas of Cardiothoracic Surgery, from basic clinical care to evidence based clinical application, and possession of skills to manage independently all problems in these areas.  16- Share in updating and improving clinical	
practice in Cardiothoracic Surgery.  9- Function as teacher in relation to colleagues, medical students and other health professions.	<ul> <li>8- التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية</li> </ul>
15- Use recent technologies to improve his practice in Cardiothoracic Surgery.	9-استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
<ul> <li>8- Demonstrate leadership competencies including interpersonal and communication skills that ensure effective information exchange with individual patients and their families and teamwork with other health professions, the scientific community and the public.</li> <li>5- Function as a leader of a team to provide patient care that is appropriate, effective and compassionate for dealing with health problems and health promotion.</li> </ul>	10-التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
10- Master decision making capabilities in different situations related to Cardiothoracic Surgery.	11 اتخاذ القرار في ظل المعلومات المتاحة
11- Show leadership responsiveness to the larger context of the health care system, including e.g. the organisation of health care, partnership with health care providers and managers, practice of cost-effective health care, health economics, and resource allocations.	12-توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
12- Demonstrate in depth awareness of public health and health policy issues including	13–الوعي بدوره في تنمية المجتمع والحفاظ

independent ability to improve health care, and identify and carryout system-based improvement of care.	على البيئة
13- Show model attitudes and professionalism.	14-التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
<ul> <li>14- Demonstrate commitment for lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages and in Cardiothoracic Surgery or one of its subspecialties.</li> <li>15- Use recent technologies to improve his practice in Cardiothoracic Surgery.</li> </ul>	15-الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

# 2- Academic standards

2 Academic Standards				
Faculty ARS	NAQAAE General ARS for			
	Postgraduate Programs			
2.1. A- Established, updated and	2-1-أ- النظريات و الأساسيات والحديث من			
evidence- based theories, basics and developments of Cardiothoracic Surgery	المعارف في مجال التخصص			
and relevant sciences.	والمجالات ذات العلاقة			
2.1. B- Basic, methods and ethics of medical	2-1-ب -أساسيات و منهجيات و أخلاقيات			
research.	البحث العلمي و أدواته المختلفة			
2.1. C- Ethical and medicologal principles of medical	2-1-ج- المبادئ الأخلاقية و القانونية			
practice related to Cardiothoracic Surgery.	للممارسة المهنية في مجال			
	التخصص			
2.1. D- Principles and measurements of quality in	2-1-د مبادئ و أساسيات الجودة في الممارسة			
Cardiothoracic Surgery	المهنية في مجال التخصص			
2.1. E- Principles and efforts for maintains and	2-1-هـ - المعارف المتعلقة بآثار ممارسته			
improvements of public health.	المهنية على البيئة وطرق تنمية البيئة			
	وصيانتها			
2.2. A- Application of basic and other relevant	2-2-أ -تحليل و تقييم المعلومات في مجال			
science to solve Cardiothoracic Surgery related problems.	التخصص و القياس عليها و			
roused production	الاستنباط منها			
2.2.B- Problem solving based on available data.	2-2-ب -حل المشاكل المتخصصة استنادا			
	علي المعطيات المتاحة			
2.2.C- Involvement in research studies related to	2-2-ج -إجراء دراسات بحثية تضيف إلى			
Cardiothoracic Surgery.	المعارف			
2.2. D- Writing scientific papers.	2-2-د- صياغة أوراق علمية			
2.2. E- Risk evaluation in the related clinical practice.	2-2—هـ تقييم المخاطر في الممارسات			
	المهنية			
2.2.F- Planning for performance improvement in	2-2-و التخطيط لتطوير الأداء في مجال			
Cardiothoracic Surgery.	التخصص			

2-2-G- Creation and innovation in the Cardiothoracic Surgery.	2-2-ز - الابتكار /الإبداع
2.2. H- Evidence – based discussion.	2-2-ح- الحوار والنقاش المبني علي البراهين والأدلة
2.2.I- Discussion making in different situations related to Cardiothoracic Surgery	2-2—ط -اتخاذ القرارات المهنية في سياقات مهنية مختلفة
<ul> <li>2.3. A- MD students must be able to provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health extensive level means in depth understanding and from basic science to evidence – based clinical application and possession of skills to manage independently all problems in Cardiothoracic Surgery.</li> <li>2.3. B- Master patient care skills relevant to Cardiothoracic Surgery or patients with all diagnoses and procedures.</li> </ul>	2-3-أ -إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
2.3. C- Write and evaluate reports for situations related to the field of Cardiothoracic Surgery.	2-3-ب- كتابة و تقييم التقارير المهنية.
2.4.A-Master practice-based learning and improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, improvements in patient care and risk management	2-3-ج -تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
2.4.B- Use competently all information sources and technology to improve his practice.	2-3-د - استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
2.4.A-Master practice-based learning and improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, improvements in patient care and risk management  2.4.G- Participate in improvement of the education system.	2-3-هـ -التخطيط لتطوير الممارسة المهنية وتنمية أداء الآخرين

# **II-Program ARS versus program ILOs**

# Comparison between ARS- ILOS for medical doctorate for Cardiothoracic surgery

(ARS)	(ILOs)
2-1- Knowledge and understanding	2-1- Knowledge and understanding
<b>2-1-A-</b> Established, updated and evidence-based Theories, Basics and developments of Cardiothoracic Surgery and relevant sciences.	2-1-A- Demonstrate in-depth knowledge and understanding of theories, basics and updated biomedical, clinical epidemiological and socio behavioral science relevant to his specialty as well as the evidence — based application of this knowledge to patient care.
<b>2-1-B</b> Basic, methods and ethics of medical research.	<b>2-1-B-</b> Explain basics, methodology, tools and ethics of scientific medical, clinical research.
<b>2-1-C-</b> Ethical and medicologal principles of medical practice related to Cardiothoracic Surgery field.	<b>2-1-C-</b> Mention ethical, medico logical principles and bylaws relevant to his practice in the field of Cardiothoracic Surgery.
<b>2-1-D-</b> Principles and measurements of quality in the Cardiothoracic Surgery field.	<b>2-1-D-</b> Mention principles and measurements of quality assurance and quality improvement in medical education and in clinical practice of Cardiothoracic Surgery.
<b>2-1-E</b> -Principles and efforts for maintains and improvements of public health.	2-1-E- Mention health care system, public health and health policy, issues relevant to this specialty and principles and methods of system — based improvement of patient care in common health problems of the field of Cardiothoracic Surgery.
2-2- Intellectual skills:	2-2- Intellectual skills:
2-2-A-Application of basic and other	2-2-A- Apply the basic and clinically

relevant science to solve Cardiothoracic Surgery related problems.	supportive sciences which are appropriate to Cardiothoracic Surgery related conditions / problem / topics.
<b>2-2-B-</b> Problem solving based on available data.	<b>2-2-B-</b> Demonstrate an investigatory and analytic thinking "problem — solving "approaches to clinical situation related to Cardiothoracic Surgery.
<b>2-2-C-</b> Involvement in research studies related to the Cardiothoracic Surgery.	2-2-C- Plan research projects.
2-2-D Writing scientific papers.	2-2-D- Write scientific paper.
<b>2-2-E</b> -Risk evaluation in the related clinical practice.	<b>2-2-E-</b> Participate in clinical risk management as a part of clinical governance.
<b>2-2-F-</b> Planning for performance improvement in the Cardiothoracic Surgery field.	<b>2-2-F-</b> Plan for quality improvement in the field of medical education and clinical practice in Cardiothoracic Surgery.
<b>2-2-G-</b> Creation and innovation in the specialty field.	<b>2-2-G-</b> Create / innovate plans, systems, and other issues for improvement of performance in his practice.
<b>2-2-H-</b> Evidence – based discussion.	<b>2-2-H-</b> Present and defend his / her data in front of a panel of experts.
<b>2-2-I-</b> Decision making in different situations related to Cardiothoracic Surgery fields.	<b>2-2-I-</b> Formulate management plans and alternative decisions in different situations in the field of the Cardiothoracic Surgery.

# continuous (ARS)

### 2-3- Clinical skills:

- 2-3-A- MD students must be able to provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health extensive level means in depth understanding and from basic science to evidence based clinical application and possession of skills to manage independently all problems in his field of practice.
- **2-3-B-** Master patient care skills relevant to Cardiothoracic Surgery for patients with all diagnoses and procedures.

# continuous \_ \_ \_

# (ILOs)

### 2/3/1/Practical skills (Patient care :)

- 2-3-1-A- Provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. p.s.
  Extensive level means in-depth understanding from basic science to evidence based clinical application and possession of skills to manage independently all problems in field of practice.
- **2-3-1-B-** Provide extensive level of patient care for patients with all common diagnoses and for uncomplicated procedures related to Cardiothoracic Surgery.
- **2-3-1-C-** Provide extensive level of patient care for non-routine, complicated patients and under increasingly difficult circumstances, while demonstrating compassionate, appropriate and effective care.
- **2-3-1-D-** Perform diagnostic and therapeutic procedures considered essential in the field of Cardiothoracic Surgery.
- 2-3-1-E- Handles unexpected complications, while demonstrating compassion and sensitivity to patient needs and concerns.
- 2-3-1-F- Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families in the

- Cardiothoracic Surgery related situations.
- **2-3-1-G-** Gather essential and accurate information about patients of the Cardiothoracic Surgery related conditions.
- 2-3-1-H Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence and clinical judgment for the Cardiothoracic Surgery related conditions.
- **2-3-1-I-** Develop and carry out patient management plans for Cardiothoracic Surgery related conditions.
- **2-3-1-J-** Counsel and educate patients and their families about Cardiothoracic Surgery related conditions.
- 2-3-1-K- Use information technology to support patient care decisions and patient education in all Cardiothoracic Surgery.related clinical situations.
- 2-3-1-L- Perform competently all medical and invasive procedures considered essential for the Cardiothoracic Surgery related conditions / area of practices.
- **2-3-1-M-** Provide health care services aimed at preventing the Cardiothoracic Surgery related health problems.
- **2-3-1-N-** Lead health care professionals, including those from other

	disciplines, to provide patient- focused care in Cardiothoracic
	Surgery related conditions.
2-3-C- Write and evaluate reports for situations related to the field of Cardiothoracic Surgery.	2-3-1-O- Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets. (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive timely and legible medical records).
2-4- General skills	2/3/2 General skills
2-4-A- Master practice-based learning and improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, improvements in patient care and risk	<b>2-3-2-A-</b> Demonstrate the competency of continuous evaluation of different types of care provision to patients in the different area of Cardiothoracic Surgery
management	<b>2-3-2-B-</b> Appraise scientific evidence.
	<ul> <li>2-3-2-C- Continuously improve patient care based on constant self-evaluation and <u>life-long learning</u>.</li> <li>2-3-2-D. Participate in clinical audit and research projects.</li> </ul>
	<b>2-3-2-E-</b> Practice skills of evidence-based Medicine (EBM).
	2-3-2-G- Design logbooks.
	2-3-2-H- Design clinical guidelines and standard protocols of management.
	<b>2-3-2-I-</b> Appraise evidence from scientific studies related to the patients'

health problems.

<b>2-4-B-</b> Use competently all information sources and technology to improve his practice.	<ul> <li>2-3-2-J- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies.</li> <li>2-3-2-K- Use information technology to manage information, access online medical information; for the important topics.</li> </ul>
<b>2-4-C-</b> Master skills of teaching and evaluating others.	<b>2-3-2-F-</b> Educate and evaluate students, residents and other health professionals.
2-4-D- Master interpersonal and communication Skills that result in effective information exchange and teaming with patients, their families, and other health professionals.	<ul> <li>2-3-2-L- Master interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals, including:         <ul> <li>Present a case.</li> </ul> </li> <li>Write a consultation note.</li> <li>Inform patients of a diagnosis and therapeutic plan Completing and maintaining comprehensive.</li> <li>Timely and legible medical records.</li> </ul>
	<ul> <li>Teamwork skills.</li> <li>2-3-2-M- Create and sustain a therapeutic and ethically sound relationship with patients.</li> </ul>
	<b>2-3-2-N</b> - Elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.
	<b>2-3-2-O-</b> Work effectively with others as a member or leader of a health care team or other professional group.

2-4-E- Master Professionalism behavior, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.	<ul> <li>2-3-2-P- Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.</li> <li>2-3-2-Q- Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.</li> <li>2-3-2-R- Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.</li> </ul>
<ul> <li>2-4-F- Demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively use system resources to provide care that is of optimal value.</li> <li>2-4-G- Participate in improvement of the education system.</li> </ul>	<ul> <li>2-3-2-S - Work effectively in health care delivery settings and systems related to Cardiothoracic Surgery including good administrative and time management</li> <li>2-3-2-T- Practice cost-effective health care and resource allocation that does not compromise quality of care.</li> <li>2-3-2-U- Advocate for quality patient care and assist patients in dealing with system complexities.</li> <li>2-3-2-V- Design, monitor and evaluate specification of under and post graduate courses and programs.</li> </ul>
2-4-H- Demonstrate skills of leading scientific meetings including time management	2-3-2-W- Act as a chair man for scientific meetings including time management  2-3-2-S- Work effectively in health care delivery settings and systems related to Cardiothoracic Surgery including good administrative and time management.
<b>2-4-O-</b> Demonstrate skills of self and continuous learning .	From A to H

# III-Program matrix Knowledge and understanding

Course	Program covered ILOs							
	2/1/A	2/1/B	2/1/C	2/1/D	2/1/E			
Course 1 : Medical statistics and computer		<b>✓</b>						
Course 2 : Research Methods		✓						
Course 3 : Medical reports and medical ethics			<b>√</b>					
Course 4 : Cardiovascular Surgery	✓	<b>√</b>	✓	✓	✓			

# Intellectual

Course		Program covered ILOs							
	2/2/A	2/2/B	2/2/C	2/2/D	2/2/E	2/2/F	2/2/G	2/2/H	2/2/I
Course 1: Medical statistics and computer			<b>√</b>	<b>√</b>				<b>√</b>	
Course 2 : Research Methods			<b>√</b>	<b>√</b>				<b>√</b>	
Course 3: Medical reports and medical ethics								<b>√</b>	
Course 4 : Cardiovascular Surgery	✓	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	✓	<b>√</b>

# **Practical Skills (Patient Care)**

Course		Program covered ILOs						
	2/3/1/A	2/3/1/B	2/3/1/C	2/3/1/D	2/3/1/E	2/3/1/F	2/3/1/G	2/3/1/H
Course 1: Medical statistics and computer								
Course 2 : Research Methods								
Course 3: Medical reports and medical ethics				✓				✓
Course 4 : Cardiovascular Surgery	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>

# **Practical Skills (Patient Care)**

Course	Program covered ILOs						
	2/3/1/ I	2/3/1/ J	2/3/1/ K	2/3/1/ L	2/3/1/ M	2/3/1/ N	2/3/1/ 0
Course 1 : Medical statistics and computer							
Course 2 : Research Methods							
Course 3 : Medical reports and medical ethics	<b>√</b>						<b>√</b>
Course 4 : Cardiovascular Surgery	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>

# **General Skills**

Course		Program covered ILOs						
	2/3/2/A	2/3/2/B	2/3/2/C	2/3/2/D	2/3/2/E	2/3/2/F	2/3/2/G	2/3/2/H
Course 1: Medical statistics and computer		<b>√</b>						
course 2 : Research Methods		<b>√</b>		<b>√</b>	<b>√</b>			
course 3 : Medical reports and medical ethics								
Course 4 : Cardiovascular Surgery	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>→</b>	<b>√</b>	<b>√</b>	<b>√</b>

# **General Skills**

Course		Program covered ILOs						
	2/3/2/I	2/3/2/J	2/3/2/K	2/3/2/L	2/3/2/ M	2/3/2/N	2/3/2/0	2/3/2/P
Course 1: Medical statistics and computer	✓	<b>√</b>	✓					
course 2 : Research Methods	<b>~</b>	<b>√</b>						
course 3: Medical reports and medical ethics				✓				
Course 4 : Cardiovascular Surgery	<b>✓</b>	<b>√</b>	<b>√</b>	✓	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>

# **General Skills**

Course		Program covered ILOs					
	2/3/2/Q	2/3/2/R	2/3/2/S	2/3/2/T	2/3/2/U	2/3/2/V	2/3/2/W
Course 1 : Medical statistics and computer							
Course 2 : Research Methods							
Course 3: Medical reports and medical ethics							
Course 4 : Cardiovascular Surgery	✓	✓	<b>√</b>	<b>√</b>	<b>√</b>	✓	<b>✓</b>

# Annex 7, Additional information:

# **Department information:**

# **Program Academic Director (Head of the Department):**

Prof. Ahmed Ghoneim

# **Staff members:**

M	Name
1	Professor . Dr / Ali Mohamed Abdel Wahab
2	Professor . Dr / Ahmed El Minshawy
3	Professor . Dr / Ahmed Mohamed Fathy Ghoneim
4	Professor . Dr /Mahmoud Khairy Abdel Latif
5	Professor . Dr / Mohamed Ayad
6	Professor . Dr / Sameh abed EL Rahman
7	Assistant . professor / Hussein Khairy Elkhayat
8	Assistant . professor / Mohamed Mahmoud Ahmed
	Mustafa
9	Assistant . professor / Mohamed Ahmed Tasha
10	Lecturer / Anwar Amin Attia
11	Lecturer / Mohamed Alaa Nady
12	Lecturer / Ahmed Ibrahim Abdel Wahab
13	Lecturer / Amr Ibrahim Abdel Aal
14	Lecturer / Mahmoud Abdel – Hay AL- Husseini
15	Lecturer / Yasser Hamdy Hussein
16	Lecturer / Ahmed Mohamed Nabil
17	Lecturer / Mahmoud Atef Salam
18	Lecturer / Mahmoud Atef Salam
19	Lecturer / Mohamed Farouk Abdel Hafez
20	Lecturer / Ehab Abdel Aal Zahran

# **Opportunities within the department:**

- 3 outpatients clinic that receives 50 patients/day and working 3days /week. (new patients, follow up post discharge patients)
- cardiothoracic surgery Department ward that accommodates to 27 patients
- cardiothoracic surgery department operative theater that have
   3 operating rooms working 4days/week.
- Pediatric cardiothoracic surgery unit in children' hospital that have one operating room working 3 days/week and 10 beds of postoperative ICU
- Trauma reception( in collaboration with other specialties) which accommodates to 30 patient & CPR Unit.
- Operative theater of the trauma unit( in collaboration with other specialties) that have 4 operating rooms working 24 hours.
- The inpatient ward of the trauma unit that accommodates for 82 patients besides a trauma ICU that accommodates to 10 patients and intermediate care unit that accommodates to 20 patients.
- Scientific Library (cardiothoracic surgery Text Books and periodicals), MD, MSc thesis,
- Seminar room with data show
- Electronic Library of Scientific Seminars, case presentations.

### Department quality control insurance for completing the program:

- Evaluation by the Department head and staff members.
- Attendance in different wards in the cardiothoracic surgery department which include:
  - 3 outpatients clinic that receives 50 patients/day and working
     3days /week. (new patients, follow up post discharge patients)
  - cardiothoracic surgery Department ward that accommodates to 27 patients
  - cardiothoracic surgery department operative theater that have 3 operating rooms working 4days/week.
  - Pediatric cardiothoracic surgery unit in children' hospital that have one operating room working 3 days/week and 10 beds of postoperative ICU

- Trauma reception( in collaboration with other specialties) which accommodates to 30 patient & CPR Unit.
- Operative theater of the trauma unit( in collaboration with other specialties) that have 4 operating rooms working 24 hours.
- The inpatient ward of the trauma unit that accommodates for 82 patients besides a trauma ICU that accommodates to 10 patients and intermediate care unit that accommodates to 20 patients.
- Scientific Library (cardiothoracic surgery Text Books and periodicals), MD, MSc thesis,
- Seminar room with data show
- Electronic Library of Scientific Seminars, case presentations.
- Regular Trainee assessment
- Log book monitoring
- MCQ exam
- Case Presentations
- Surgical Demonstration
- Final Written, Clinical and Oral Exam

(End of the program specifications)