



Master (MSC) Degree Program and Courses Specifications for Transfusion Medicine

(According to currently applied Credit point bylaws)

Clinical Pathology
Department
Faculty of medicine
Assiut University
2021-2022/2022-2023

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# **Master degree of Transfusion Medicine**

#### A. Basic Information

Program Title: Master degree of Transfusion Medicine

Nature of the program: Single.

Responsible Department: joint by Clinical Pathology Department Assiut University.

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

Prof Dr. Azza Mahmoud Ezz EL Din

Principle coordinator: Prof Dr. Eman Nasr Eldin Mohamed

#### **Assistant coordinator(s)**

Staff members of Blood Bank
Staff members of Hematology unit
Staff members of immunology unit
Staff members of microbiology unit

#### **Internal evaluators:**

Prof.Dr/ Nabela Thabet

**Prof.DR/ Wafaa Tohamy** 

Prof. Dr/Zeinab Abd Alal

**Prof.Dr/ Soheir Mohamed** 

Prof.Dr/ Maha Atwa

Prof.Dr/ Soheir Kamel

Prof.Dr/ Heba Rashed

- **4** External evaluator
- Prof.Dr./ Prof.Dr./Reem Jan
- Prof.Dr./ DR Magdy El Ekiaby
- ♣ Date of Approval by the Faculty of Medicine Council of Assiut University:13 /7/2021.
- ♣ Date of most recent approval of program specification by the Faculty of Medicine Council of Assiut University: 13/7/2021
- Total number of courses: 4 courses
  - First part: 2 courses
  - Second part: one course.
  - Three obligatory courses.
  - One elective course.

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

# 1- Program aims

- 1/1. To enable candidates to keep with international standards of **Transfusion Medicine** by teaching high level of laboratory skills, in addition to update medical knowledge as well as laboratory experience and competence in the area of **Transfusion Medicine** and enabling the candidates to deal properly with all aspects of transfusion services
- 1/2. To help candidates to deal properly with all blood component and being able to manage efficiently blood centers in hospitals.
- 1/3. To recognize problems in clinical medicine those are related to transfusion therapy and apply concepts and principles in the core curriculum to clinical situations.
- 1/4. To provide appropriate therapeutic solutions to **transfusion medicine problems.**
- 1/5. Become familiar with the consultation role of **Transfusion Medicine** research.
- 1/4. To introduce candidates to the basics of scientific medical research.
- 1/5. To provide the candidates with master degree:
  - Enabling them to start professional careers as specialist's in Egypt.
  - Making them recognized as specialists abroad.
  - Enabling them to pursue higher studies and subspecialties.
  - Enabling them to understand and get the best of published scientific research and do their own.
  - Updating their knowledge and self-learning.
  - Fellow the ethical standard of medical and clinical practice of patient care and research work according to our local Ethical Committee.

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

# **2/1Knowledge and understanding:**

- A. Explain the essential facts and principles of relevant basic sciences related to laboratory tests performed on donated blood, methodology, sensitivity/specificity of infectious disease markers, donor criteria and donor registry
- B. Mention essential facts of clinically supportive sciences to define the basic strategies in different **Blood Bank** processes and activities
- C. Describe different techniques used in all **Blood Bank** related to Preparation and Storage of Blood Components and Manufacturing from whole blood.
- D.Demonstrate the role of **Blood Banks** in cord blood and hematopoietic stem cell transplantation
- E. Describe different techniques related to Minipool-Plasma Fractionation
- F. Give recent and update in the major aspects for **Transfusion Medicine** management and define the application of information management requirements needed for blood banking facility.
- G.Describe the quality assurance and quality improvement for all activities **Transfusion Medicine.**
- H.Mention the basic ethical and medico-legal principles relevant to **Transfusion Medicine.**
- I. Mention the ethical and scientific principles of medical research.
- J. State the impact of common health problems in the field of **Transfusion Medicine** on the society.

#### 2/2 Intellectual outcomes

#### By the end of the program the candidate should be able to;

- A. Apply knowledge of the antigen and antibody characteristics of blood group systems in procedures to detect and identify them.
- B. Demonstrate a theoretical concept, investigatory and analytic thinking approach (problem solving) in immunological and serological techniques to guarantee safety of blood transfusion.

- C. Recognize different techniques used in all Blood Bank related to Preparation and Storage of blood components and manufacturing from whole blood.
- D. Recognize the indications and contraindications of different units of blood components.
- D. Recognize, manage and prevent common problem related reactions to Blood **Transfusion Medicine**.
- E. Organize **Transfusion Medicine** laboratory work areas and tasks in such a way as to accomplish laboratory assignments and unknowns efficiently in preparing to meet patient needs.
- F. Monitor hospital transfusion practices compared to institutional, national or international benchmarks and activate hospital transfusion committee to facilitate communication between those involved with transfusion
- G. Formulate management plans for continuing education program for technologists, physicians, providers within the department and institution infield of **Transfusion Medicine**
- H. Review ongoing quality control, proficiency testing, transfusion practice audits and competency evaluation activities

# 2/3 Skills

#### By the end of the program the candidates should be able to;

- A. Perform donor recruitment, motivation, donor selection, phlebotomy selection, post donation care of donor, outdoor blood donation (Carry out management plans related venesection in donation).
- B. Perform Phenotype blood for other blood group system and screen blood for the presence of antibodies, then to identify these antibodies.
- C. Perform cross match recipients and donor samples and direct antiglobulin test.
- D. Perform different techniques used in all blood bank units related to Preparation and Storage, transportation of blood components and manufacturing from whole blood.
- E. Apply the indications and contraindications of different units of blood components.

- F. Perform the blood transfusion process including dealing with request form, selection of appropriate unite for patient, pre-transfusion preparation of blood unites, uses of medication at time of transfusion, monitoring and documentation of blood transfusion.
- G. Provide health care services aimed to preventing health problems related to blood and blood components screening for various markers such as HIV, HCV, HBsAg, Syphilis. Methodology such as ELISA, Spot, rapid agglutination tests, automated analyzer, NAT techniques "such as PCR, TMA", Laboratory safety.
- H. Perform competently for procedures related to apharesis session (donation and therapeutic).
- I. Design check lists for quality control
- J. Provide patient-focused care in common conditions related to blood transfusion medicine while working with health care professionals, including those from other disciplines
- K. Write all forms of professional reports related to the blood transfusion medicine (lab reports, experiments reports,).

# 2/3/2 General skills

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

# By the end of the program the candidates should be able to:

- A. Perform Phenotype blood for other blood group system and screen blood for the presence of antibodies, then to identify these antibodies.
- B. Perform cross match recipients and donor samples and direct antiglobulin test.
- C. Carry out management plans related venesection in donation.
- D. Provide health care services aimed to preventing health problems related to blood and blood components for Blood born infections through uses of advanced laboratory technology.
- E. Perform blood transfusion in special situations as neonate, organ transplant patient, AIHA, auto-transfusion and exchange transfusion.
- F. Know the technique of hematopoietic stem cell separation and transplantation.
- G. Perform competently for procedures related to apheresis session (donation and therapeutic).
- H. Design check lists for quality control

- I. Provide patient-focused care in common conditions related to blood transfusion medicine while working with health care professionals, including those from other disciplines.
- J. Write all forms of professional reports related to the blood transfusion medicine (lab reports, experiments reports,).

# 2/3/2 General skills

By the end of the program the candidates should be able to;

# **Including:**

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

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

- A. Perform practice-based improvement activities using a systematic methodology (share in audits and use logbooks).
- B. Appraises evidence from scientific studies.
- C. Conduct epidemiological Studies and surveys.
- D. Perform data management including data entry and analysis.
- E. Facilitate learning of students and other health care professionals.

# **Interpersonal and Communication Skills**

- F. Maintain therapeutic and ethically sound relationship with patients.
- G. Elicit information using effective nonverbal, explanatory, questioning, and writing skills.

- H. Provide information using effective nonverbal, explanatory, questioning, and writing skills.
- I. Work effectively with others as a member of a health care team or other professional group.

#### **Professionalism**

- J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society
- K. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices
- L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities

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

- M. Work effectively in relevant health care delivery settings and systems.
- N. Practice cost-effective health care and resource allocation that does not compromise quality of care.
- O. Assist patients in dealing with system complexities.

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

# Academic standards for master degree in *Transfusion Medicine*

Assiut Faculty of Medicine developed master 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 set 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 23/9/2014.

#### Program admission requirements.

According to the Clinical Pathology Department, all applicants for Transfusion specialized M.Sc. degree should have MSc. degree in Clinical pathology

## 4- Program External References(Benchmarks)

- 1. ACGME (Accreditation Council for Graduate Medical education).
- 2. University of Groningen Graduate School of Medical Sciences. Management of Transfusion Medicine. https://www.groningenbiomed.com/masters
- 3. ASH (American Society of Hematology) Executive Committee recommendations for curriculum requirements in the hematology subspecialty of Transfusion Medicine. <a href="https://www.hopkinsmedicine.org">https://www.hopkinsmedicine.org</a> materials > he

Comparison between program and external reference			
Item	Item  Master Degree for Transfusion Medicine  Medicine  Management of Transfusion Management of Transfusion Medicine		
Goals	Matched	Matched	
ILOS	Matched	Matched	
Duration	2-4 years	3 years	
Requirement	Different	different	
<b>Program structure</b>	Different	different	

# **5. Program Structure and Contents**

# A. Duration of program: 3 – 5 years

#### B. Structure of the program:

Total number of credits points: 180 (20 out of them for thesis)

Didactic# 40 (22.2 %), practical 120 (66.7%), thesis 20 (11.1%), total 180

First part

Didactic 14 (35 %), practical 24 (60 %), elective course 2 CP (5%), total 40 CP

Second part

Didactic 24 (20%), practical 96 (80 %), total 120 # Didactic (lectures, seminars, tutorial)

#### According the currently applied by laws:

Total courses 160 CP

Compulsory courses: 98.9%

Elective course: 2 credit point: 1.1%

	Points	% from total
<ul> <li>Basic science courses</li> </ul>	18	11.3%
Humanity and social courses	2	1.1%
<ul><li>Speciality courses</li></ul>	134	74.5%
<ul><li>Others (Computer)</li></ul>	-	-
<ul><li>Field training</li></ul>	120	66.7%
Thesis	20	11.1%

# C. Program Time Table

# A. Duration of program 3 years maximally 5 years divided into

#### Part 1: (36.6% from final marks)

Program-related basic science courses and ILOs + elective courses Students are allowed to sit the exams of these courses after at least 12 months from applying to the MSc degree.

One elective course can be set during either the 1st or 2nd parts.

#### Thesis

For the MSc thesis;

MSc thesis subject should be officially registered within 6 months from application to the MSc degree.

Discussion and acceptance of the thesis could be set after 12 months from registering the MSc subject;

It should be discussed and accepted before passing the second part of examination)

#### Part 2 (3 years) (64.4% from final marks)

Program –related Specialty courses and ILOs Students are not allowed to sit the exams of these courses before 3 years from applying to the MSc degree.

The students pass if they get 50% from the written exams and 60% from oral and clinical/practical exams of each course and 60% of summation of the written exams, oral and clinical/practical exams of each course Total degrees 1900 marks.

700 marks for first part 1200 for second part Written exam 40% - 70%. Clinical /practical and oral exams 30% - 60%.

# D. Curriculum Structure : (Courses): Courses as mentioned above Curriculum Structure: (Courses / units/ rotations): Year 1

The first year of the fellowship is primarily for basic science related medical knowledge (studied in speciality courses over 6-18 months in collaboration with departments of (Anaesthesia and Intensive Care, and Clinical Pathology Department Assiut Faculty of Medicine and a practical year during which the fellows gain experience in blood bank microbiology and immunology laboratories. Throughout the year, emphasis is placed on developing: 1) understanding the management of transfusion reaction; 2) understanding Basics of Transfusion medicine processes and activities in blood bank; and 3) an understanding adverse reaction of Blood transfusion and skills in communicating with nursing and medical staff as well as house staff. The first year fellow spends the year rotating among different services: 1) Department of Anaesthesia and Intensive Care at Assiut University Hospital Clinical Pathology Department and Blood bank at Assiut University Hospital These rotations are briefly described below.

#### Years 2 and 3

Although the primary focus of the second and third year is the development of skills and experience in research (see below), senior fellows continue to participate in practical activities and certain procedures. First, they maintain their longitudinal blood bank experience throughout these years. Senior fellows will also actively participate in the regular weekly scientific seminars and collaborate with those fellows in their first year. In addition, fellows rotate through the different area of blood bank services approximately two months on laboratory rotations (blood bank which include blood donation, Blood Group, Blood Transfusion Practices, Blood Component Manufacturing and Storage Therapeutic apheresis and Blood transfusion in special conditions addition to blood bank management). This rotation complements the previous inpatient experiences. To identify a research area in which the subsequent two years will be focused. Together, the trainee and supervisors develop a project for investigation that is of interest to the trainee and within the expertise of the faculty member; in certain instances, joint mentorship provided by two faculty members within the Division, or by one divisional faculty member and a collaborator from another unit, is appropriate. By the beginning of the second year, the fellow presents a conference in which he/she synthesizes existing knowledge, presents the problem for investigation, and describes the proposed plan of investigation. The faculty members and fellows in attendance provide feedback to the fellow and supervisors about the proposed project; this process of peer review provides a useful experience for the fellow and often strengthens the experimental approach.

During the second and third years, the trainee carries out the proposed work in the clinical research facilities of the faculty mentor(s). The trainee also benefits from interactions with other trainees, technicians, and collaborating investigators. The trainee also participates in laboratory meetings and journal clubs specific to individual research groups. Presenting research findings at regional and national meetings and submitting work for publication are both important aspects of the investigative endeavor. The trainee will receive guidance and specific assistance in learning to prepare data for oral and written presentation, to prepare graphics, and to organize talks and prepare slides. Throughout the two-year research training period, it is anticipated that

the fellow will assume increasing intellectual responsibility and technical independence.

# **Research Training Pathways**

Selection of a research project and supervisors is subject to the approval of the Clinical Pathology Department council approval and vice-Dean of post graduate studies of the faculty as officially regulated. Fellows may elect either essay or clinically or epidemiologically -based research training pathways. For all research fellows, a research advisory committee will be selected by the fellow based on the approved regulatory rules of the faculty council. This committee will monitor the progress of research fellows and provide advice regarding research training and career development.

# **courses of the program:**

courses	Course	Core Credit points		
Courses	Code	Lectures training total		
First Part				COCO
Basic science courses (14CP) 1) Course1: Basics of Transfusion medicine	TRM231A	12	2.0	14
General clinical compulsory courses (4 CP)  2) Course2:Emergency in Transfusion medicine	TRM229	2	2	4
Elective courses*		2CP		
- Elective course				
Clinical training and scientific activities: (24 CP)				
A. Clinical training in basic and General clinical compulsory courses (4 CP)	TRM231A		2	
Course1: Basics of Transfusion medicine  Course2:Emergency in Transfusion medicine	TRM229		2	
B. Clinical training and scientific activities in Speciality course (20 CP)				

Course 3; Transfusion medicine and blood banking	TRM231B		20	
Thesis		20 CF	)	
Total of the first part		40 CF		
Second Part	Specialty courses 24 CP Specialty Clinical Work (log Book) 96 CP			ok) 96
Speciality Course (24 CP) Course 3; Transfusion medicine and blood banking	TRM231B	24		
Training and practical activities in Transfusion medicine and blood banking (96 CP)	TRM231B		96	
Total of the second part		24	96	120
Total of the degree	180			

<sup>\*</sup> Elective courses can be taken during either the 1st or 2nd parts.

#### Student work load calculation:

Work load hours are scheduled depending on the type of activities and targeted competences and skills in different courses

#### **Elective Courses#:**

- Medical statistics.
- Evidence based medicine.
- Medicolegal Aspects and Ethics in Medical Practice and Scientific Research
- Quality assurance of medical education
- Quality assurance of clinical practice.
- Hospital management

# One of the above mentioned courses are prerequisites for fulfillment of the degree.

#### Thesis:

20 CP are appointed to the completion and acceptance of the thesis.

# 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

#### 7-Admission requirements

# Admission Requirements (prerequisites) if any :

I. General Requirements:

According to the Clinical Pathology Department, all applicants for Transfusion medicine specialized M.Sc. degree should have M. Sc. degree in Clinical Pathology

#### **Specific Requirements:**

- a. Candidates graduated from Egyptian Universities
- b. Candidate should be fluent in English (Study Language).
- c. External Candidate should be present in our department at the 2<sup>nd</sup> year of registration of Master degree.
- d. Should attend the scientific and clinical activities of our department for at least **80%.**

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

The current departmental policy is to give working residents 1-2 week leave prior to first/ second part exams according to departmental council.

#### **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

- ♣ Examinations of the first part could be set at 12 months from registering to the MSc degree.
- ♣ Discussion of the MSc thesis could be set after 1 year from officially registering the MSc subject before setting the second part exams.
- ♣ The minimum duration of the program is 3 years.

#### The students are offered the degree when:

- 1. Passing the exams of all basic science, elective and speciality courses of this program as regulated by the post graduates approved rules by the faculty council.
- 2. Completing all scheduled CP and log book (minimum 80%).
- 3. Discussion and acceptance of the MSc\_thesis.

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

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

# Weighting of assessments:

Courses		Degrees			
	Course	Written	Degree		Total
	code	Exam	Oral	Practical	
			Exam	1	
			*	Clinical	
				Exam	
		First part			
Basic academ	ic Courses:	T	Γ	T	
Course 1:	TRM231A	٣	120	180	600
Basics of		In 3 papers			
Transfusion		(50+125+125)/ 2h+3h+3h			
medicine		211+311+311			
General					
clinical					
compulsory					
courses					
Course2;	TRM229	50 in 2 h	20	30	100
Emergency					
inTransfusion					
Medicine					
Total Marks		350	140	210	700
		Second Part			
Speciality Cou			T	T	
Course3:	TRM231B	480	220	500	1200
Transfusion					
medicine					
and blood					
banking					
Elective		50	50		100

course			
COUISE			
<b>500.00</b>			

<sup>\* 25%</sup> of the oral exam for assessment of logbook

# **Examination system:**

# > First part: after 18 months

- -Written exam one paper 2 hours in Emergency in Transfusion Medicine
- + oral & Practical exam.
- Written exam in three papers 8 hours in in Basics of Transfusion medicine + Oral & Practical exam.

#### > Second part:

Written exam four papers 3 hours for each in Transfusion medicine and blood banking + oral & Practical exam.

#### Elective courses

• Written exam one paper 1 hour in Elective course + Oral & Practical exam

# 10-Program evaluation

By whom	Method	sample
Quality Assurance Unit	Reports	#
	Field visits	
External Evaluator (s):	Reports	#
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
<ul><li>Program Principle</li></ul>	Prof. Dr		
Coordinator:	Eman Nasreldin Mohamed		
Head of the Responsible	Prof. Dr		
Department (Program  Academic Director):	Azza Mahmoud Ezzeldin		

# Annex 1: specifications for courses/

#### **Course 1) Basics of Transfusion medicine**

- Name of department: Clinical Pathology
  - Faculty of medicine
  - Assiut University
  - **2021-2022/2022-2023**

#### 1. Course data

- 1) Course Title: Basics of Transfusion medicine
- Course code: TRM231A
- Speciality: Transfusion medicine.
- Number of points: Credit points Didactic 12 credit, (85.7%) practical 2 credit points. (14.3%).total 14 credit points(100%)
- Department (s) delivering the course: Department of Clinical pathology- Faculty of Medicine-Assiut University.
  - Coordinator (s): Staff members of Clinical Pathology Department (Hematology, Immunology and microbiology Unit).
  - Course coordinator: Prof. Dr Eman Nasreldin Mohamed
  - Assistant coordinator (s) Dr.
- Date last reviewed: 7/2021
- **General requirements (prerequisites) if any : None**

Requirements from the students to achieve course ILOs are clarified in the joining log book.

#### 2. Course Aims

- **2/1 To enable candidates to keep with international standards of Basics of Transfusion medicine** by teaching high level of laboratory skills, in addition to update medical knowledge as well as laboratory experience and competence in the area of clinical immunology.
- **2/2. To help candidates** develop an understanding of the appropriate use and interpretation of patient care tests in four sub-specialty areas of clinical pathology (**Transfusion medicine**).
- **2/3 To become familiar** with the consultation role of the clinical **Transfusion medicine** in patient care and research.
- **2/4 To provide candidates** with a glimpse of the current state of the art technology and equipment of laboratory testing in **Transfusion medicine**.
- **2/5 To introduce candidates** to the basics of scientific medical research.

# 3. Course intended learning outcomes (ILOs):

# A-Knowledge and understanding

ILOs	Methods of	Methods of
	teaching/	Evaluation
	learning	
A. Describe detailed Principles of Basics of Transfusion	Didactic;	-OSCE at the
medicine of the following;	-Lectures	end of each
Blood donation	-Practical	year
Motivating factors for donation	rounds	-log book &
	-Seminars	portfolio
2. Whole blood donation Vs apheresis donation	-practical	- MCQ
3. Types: allogeneic, autologous, directed	rotations	examination
4. Donor questionnaire and interview: Eligibility and	(service	at the second
deferral criteria	teaching)	year

5. Donor reactions and their management	-Oral and written exam
> Blood component preparation	
Basic steps in component preparation & labelling     Composition & storage	
Composition: volume, cellular, plasma and clotting factor content	
3. Storage conditions for components	
Blood Group Serology/Biochemistry of the	
following; 1. Immunologic principles	
Immunoglobulin structure and genetic basis for antibody	
• diversity	
Red cell alloantibodies vs. red cell autoantibodies	
<ul> <li>Primary and secondary immune responses to red cell antigens</li> </ul>	
<ul> <li>"Naturally occurring" antibodies vs those requiring prior</li> </ul>	
• immunization	
Mechanisms of red cell sensitization	
Mechanisms of red cell destruction	
<ul><li>(1) Complement activation</li><li>(2) Intravascular vs extravascular immune hemolysis</li></ul>	
2. Red cell blood group antigens: biochemistry, genetic inheritance, immunogenicity, clinical significance, common phenotypes of:  a) Carbohydrate blood group antigens ABH	
Lewis	
Р	

I/i	
b) Protein blood group antigens	
Rh	
Kell	
Duffy	
Kidd	
MNS	
c) High frequency antigens	
d) Low frequency antigens	
3. Disease associations with the "null" phenotypes for ABO, Rh, Kell	
4. Serologic Testing	
a) Parameters affecting in vitro detection of antigen-	
antibody reactions	
b) Testing formats	
(1) Tube	
(2) Gel	
(3) Solid phase	
c) Indications, reagents, methods and interpretation of:	
(1) ABO/RhD typing	
(2) Weak D testing	
(3) Antibody screen	
(4) Antibody panel identification	
(5) Crossmatching Tests (a) Abbreviated	
b) Full	
(6) Enhancement techniques (a) Enzymes	
(b) LISS, PEG	
(7) Adsorption techniques	
(a) Autologous	
(b) Heterologous	
(8) Elution techniques	
(9) Neutralizaton techniques	
(10) Direct Antiglobulin Test (DAT)	
(11) Donath-Landsteiner Test	

(12) Hemolytic Disease of the Newborn (a) Rosette Test (b) Kleihauer-Betke Test (c) Antibody Titration Studies (13) Electronic crossmatching (a) Information system requirements (b) Procedural requirements (c) Advantages/disadvantages IV- Infectious complications of transfusion: disease associations, significance, Incidence, per unit risk, pathophysiology, signs/symptoms, prevention, donor screening, management of: (1) Viral infections (a) Hepatitis B Virus (b) Hepatitis C Virus (c) HIV I/II (d) HTLV I/II (e) West Nile Virus (f) CMV (g) EBV (2) Bacterial infections Parasitic infections (a) Syphilis (b) Malaria (c) Babesia (d) Chagas Disease (4) Prion diseases (a) Creutzfeldt-Jakob Disease (b) Variant Creutzfeldt-Jakob Disease E. Apheresis: indications, anticoagulation, timing of procedures, replacement fluids, venous access, recognition and management of adverse events for: 1. Component collection a) Platelets b) Red cells c) Granulocytes

d) Plasma

- 2. Therapeutic Apheresis procedures
- a) Plasma Exchange
- b) Red Cell Exchange
- c) Leukoreduction
- d) Red Cell Depletion
- e) LDL apheresis (Liposorber)
- f) Photopheresis
- 3. Peripheral Blood Stem Cell collections

#### PRETRANSFUSION TESTING

Patient specimen labeling requirements Patient / component identification requirements ABO / Rh, Red cell antibody screen, Cross match Abbreviation of compatibility testing in emergency

#### > TRANSFUSION INDICATIONS

Red blood cells, Platelets, Plasma / cryoprecipitate, Granulocytes Massive transfusion Metabolic complications

Dilutional coagulopathy vs Trauma associated

Coagulopathy

Switching ABO / Rh types

Adverse effects and medicolegal aspect: related to blood donation and transfusion

# \*-Complication of blood donation

immediate vasovagal

Delayed vasovagal

Chest pain

Citrate reaction

Haematoma

Painful arm

Nerve irritation

Nerve injury

Arterial puncture

Delayed bleeding

Thrombophlebitis

- \*Adverse effects of blood transfusion
- \*Acute transfusion reactions

Haemolytic transfusion reaction Bacterial contamination and septic shock Transfusion associated circulatory overload Anaphylactic reaction Transfusion related acute lung injury * Delayed complications of transfusion Delayed haemolytic transfusion reaction Post-transfusion purpura Transfusion associated graft-versus-host disease Delayed complications: transfusion transmitted infections *Massive transfusion reaction  B. Describe the pre-transfusion testing, transfusion indication, and clinical presentation and diagnosis of the following clinical conditions related to transfusion medicine:  > Blood donation  > Blood component preparation  > Immunologic principles Blood Group  > Serology/Biochemistry of red cell Infectious complications of transfusion  > Blood transfusion in special conditions  > Adverse reaction of Blood Transfusion	
Adverse reaction of Blood Transfusion	
C. State update and evidence based Knowledge of conditioned mentioned in A&B.  D. Memorize the facts and principles of the relevant basic and clinically supportive sciences related to Basic Transfusion Medicine  E. Mention the basic ethical and medicolegal principles revenant to the Basic Transfusion Medicine	
F. Mention the basics of quality assurance to ensure good clinical care in Basic Transfusion Medicine G. Mention the ethical and scientific principles of	

medical research	
H. State the impact of common health problems in the	
field of Transfusion Medicine on the society.	

# B- <u>Intellectual outcomes</u>

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Correlates the facts of relevant basic and	Clinical rounds	Procedure/case
clinically supportive sciences with clinical reasoning and management of common diseases need to Transfusion Medicine	Senior staff experience	presentation Log book
B. Demonstrate an investigatory and		
analytic thinking (problem solving)		
approaches to common clinical situations related to Transfusion Medicine		
C. Design and present cases, seminars in		
common problem of Transfusion Medicine		
D-Formulate management plans and alternative decisions in different situations in the field of Transfusion Medicine		

# **C-Practical skills**

ILOs	Methods of teaching/	Methods of Evaluation
	learning	Evaluation
A. Demonstrate an investigatory and analytic thinking approach to the following conditions: related to Basic Transfusion Medicine mentioned in AA,AB	-Didactic; -Lectures -Clinical rounds -Seminars -Clinical	OSCE at the end of each year -log book & portfolio - One MCQ
	rotations (service teaching)	examination at the second half of the second year and another

		one in the
		third year
B. Recommend the following non invasive diagnostic	Clinical round	-
laboratory procedures	with senior	presentation
- Blood Group Serology/Biochemistry.	staff	- Log book
- Red cell blood group antigens:	Observation	- Chick list
- Infectious complications of transfusion	Post graduate	
Transfusion therapy in special patients	teaching	
Complication of Blood Transfusion	Hand on	
	workshops	
C. Interpret the following non invasive diagnostic	Clinical round	Procedure
laboratory procedures	with senior	presentation
- Manual and advanced red cell Serological testing.	staff	- Log book
- Immunological techniques		- Chick list
- NAT and PCR		
- Real time PCR and its applications.		
- Advanced molecular techniques.		
- All tests mentioned in D		
D. Perform the following noninvasive diagnostic	Clinical round	Procedure
laboratory procedures:	with senior	presentation
-Serological tests:	staff	- Log book
Red cell serology	-Perform	- Chick list
serological test for detection of viral infection	under	
Microbiological examination of blood component.	supervision	
Molecular technique for diagnosis of viral infection	of senior staff	
Wielesalar teermique for diagnosis of that infection		
E. Carry out patient management plans for common	Clinical round	
conditions related to Basic Transfusion Medicine	with senior	
	staff	
F. Use information technology to support patient	Jean	
care decisions and patient education in common		
clinical situations related to Basic Transfusion		
Medicine		
G. Provide health care services aimed at preventing		
health problems related to Basic Transfusion		
Medicine like: conditioned mentioned in A.A.		
H-Provide patient-focused care in common		
conditions related to Basic Transfusion Medicine,		
while working with health care professionals,		
including those from other disciplines like:		
merading those from other disciplines like.		

Conditions mentioned in B.A.	
I. Write competently all forms of reports related to	
the Basic Transfusion Medicine, (lab reports).	

# <u>D-General Skills</u> Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology(audit, logbook)	-Case log -Observation and supervision -Written & oral communication	-Log book and
B. Appraises evidence from scientific studies(journal club)	Journal clubs - Discussions in seminars and clinical rounds	
C. Conduct epidemiological Studies and surveys.  D. Perform data management including data entry and		
analysis.  E. Facilitate learning of junior students and other health care professionals.	Clinical rounds Senior staff experience	

# **Interpersonal and Communication Skills**

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Maintain <b>diagnostic</b> 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. Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H. Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
I. Work effectively with others as a member of a health care team or other professional group.		
J. Present a case in common problems related to Basic	Clinical (practical)	
Transfusion Medicine.	round	
	Seminars	
K. Write a report in:	Senior staff	Chick list
-All investigations in Basic Transfusion Medicine.	experience	
L. Council patients and families about:	Clinical round	
-Blood donation	with senior staff	
-Indication of Blood transfusion		
- Complication of Blood transfusion		

# **Professionalism**

Professionalism		
ILOs	Methods of teaching/ learning	Methods of Evaluation
M. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	Observation Senior staff experience Case taking	1. Objective structured clinical examination 2. Patient survey
N. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices		1. 360o global rating
O. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		1. Objective structured clinical examination 2. 3600 global rating

# **Systems-Based Practice**

ILOs	Methods of teaching/ learning	Methods of Evaluation
P. Work effectively in relevant health care delivery settings and systems.	Observation Senior staff experience	360o global rating
Q. Practice cost-effective health care and resource allocation that does not compromise quality of care.		Check list evaluation of live or recorded performance
R. Assist patients in dealing with system complexities.		- 360o global rating - Patient survey

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

**Time Schedule: First Part** 

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skills	General Skills
Blood donation	A,C-H	Α	A-I	A-D
Blood component preparation	A,C-H	Α	A-I	A-F
Blood Group	A,C-H	Α	A-I	A-F
Serology/Biochemistry				
Red cell blood group antigens	A,C-H	Α	A-I	Α
Disease associations with the	A,C-D	A-D	A-I	A-C
"null" phenotypes for ABO, Rh,				
Kell				
Serologic Testing	A,C-D	A-D	A-I	A-C
Infectious complications of	A,C-D	Α	A-I	A-R
transfusion				
Pretransfusion Testing	A,C-H	A-D	A-I	A-C
Transfusion Indications	A,C-H	A-D	A-I	A-R
Adverse effects of blood	A,C-D	A-D	A-I	A-R
transfusion				
Acute transfusion reactions				
Delayed complications of	A,C-H	A-D	A-I	A-R
transfusion				
Massive transfusion reaction	A,C-H	Α	A-I	A-R

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

- 1-Didactic: Lectures.
- 2-Seminars.
- 3-Service teaching.
- 4-Post graduate teaching
- 5-hand on work shops
- 6-Case presentation
- 7-Simulations

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

- 1-Didactic: Lectures.
- 2-Seminars.
- 3-Service teaching.
- 4-Post graduate teaching
- 5-hand on work shops
- 6-Case presentation
- 7-Simulations

#### 7. Course assessment methods:

#### i. Assessment tools:

- > Clinical examination
- Written and oral examination
- > Chick list
- ➤ log book & portfolio
- Procedure/case presentation
- MCQ examination
- Objective structured clinical examination
- Check list evaluation of live or recorded performance
- Patient survey
- > 3600 global rating
- ii. Time schedule: At the end of the first part
- iii. Marks: 600 marks (300 marks for written exam in 3 papers+180 marks for practical exam+ 120 marks for oral exam)

#### 8. List of references

#### 8. List of references

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

#### ii. Essential books

- 1-Egyptian national bood transfusion policy
- 2-Blood banks-Egyptian Red Crescent
- 3- Clinical Transfusion Practice (WHO)

### iii. Recommended books

- 1-Practical transfusion medicine
- 2-transfusion medicine and hemostasis (clinical and laboratory aspect).
- 3-Laboratory and clinical transfusion medicine (basic blood bank practices).
  - iv. Periodicals, Web sites, ... etc
  - Journal of blood transfusion
  - v. Others

None

9. Signatures

Course Coordinator: Prof. Dr Eman NasrEldin Mohamed	Head of the Department: Prof. Dr Azza Mahmoud Ezz EL Din
Date:	Date:

### Course 2: Emergency in Transfusion Medicine

- Name of department: Clinical Pathology
  - Faculty of medicine
  - Assiut University
  - **2021-2022/2022-2023**

### 1. Course data

- Course Title: Emergency in Transfusion Medicine
  - Course code: TRM229
- Speciality: Transfusion medicine
- Number of points(CP): Credit points; Didactic 2 CP, (50%), practical 2 CP (50%) and total 4(100%) credit points.
- Department (s) delivering the course: Anesthesia and Intensive Care, department in conjunction with clinical pathology department.
  - ♣ Coordinator (s): Staff members of Anethesia and Intensive Care Department in conjunction with Clinical Pathology Department as annually approved by both departments councils
- **♣** Date last reviewed: 7/2021
- General requirements (prerequisites) if any: None
- Requirements from the students to achieve course ILOs are clarified in the joining log book.

### 2. Course Aims

2.1The student should acquire the detailed principals of clinical emergency care related to blood donation and adverse blood transfusion reaction

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

### A- Knowledge and understanding

ILOs	Methods of	Methods of
	teaching/	Evaluation
	learning	
A. Describe the etiology, clinical picture, diagnosis and management of the following Adverse effects: related to blood donation and transfusion  Complication of blood donation  immediate vasovagal  Delayed vasovagal  Chest pain  Citrate reaction  Haematoma  Painful arm  Nerve irritation  Nerve injury  Arterial puncture  Delayed bleeding  Thrombophlebitis  Adverse effects of blood transfusion  Acute transfusion reactions  Haemolytic transfusion reaction  Bacterial contamination and septic shock  Transfusion associated circulatory overload  Anaphylactic reaction  Transfusion related acute lung injury  Delayed complications of transfusion  Delayed haemolytic transfusion reaction  Post-transfusion purpura  Transfusion associated graft-versus-host disease  Delayed complications: transfusion transmitted infections  Massive transfusion reaction	Didactic; -Lectures -Clinical rounds -Seminars -Clinical rotations (service teaching)	-OSCE at the - log book & portfolio - MCQ examination - Oral and written exam

### B- Intellectual outcomes

ILOs	Methods of	Methods of
	teaching/	Evaluation
	learning	
A. Correlates the facts of relevant basic and clinically supportive sciences with clinical reasoning, diagnosis and management of common adverse effects related to blood donation and blood transfusion.		Procedure/case presentation Log book

### C- Practical skills (Patient Care)

ILOs	Methods of	Methods of
	teaching/	Evaluation
	learning	
A. Obtain proper history and examine donors/ patients in	-Didactic;	OSCE
caring and respectful behaviors.	-Lectures	-log book &
	-Clinical	portfolio
	rounds	
	-Seminars	
	-Clinical	
	rotations	
	(service	
	teaching)	
B. Perform the following noninvasive Diagnostic and	Clinical round	Procedure
therapeutic procedures.	with senior	presentation
-Blood gases	staff	- Log book
-Venous blood sampling	-Perform	- Chick list
- Urine analysis by dipsticks	under	
-Airway suctioning	supervision	
-Nasogastric tube insertion	of senior staff	
-Intravenous line insertion		

C. Prescribe the following noninvasive therapeutic procedures:	Clinical round	- Procedure
-Prescribe proper treatment for conditions in A.A	with senior	presentation
	staff	- Log book
		- Chick list
D. Community and the community of the co		
D. Carry out patient management plans for common	Clinical round	
conditions related to emergency in Transfusion Medicine.	with senior	
E. Use information technology to support patient care	staff	
decisions and patient education in common clinical situations		
related to emergency in Transfusion Medicine .		
F. Write competently all forms of patient charts and sheets		
including reports evaluating these charts and sheets (Write a		
consultation note, inform donors/patients of a diagnosis and		
therapeutic plan, completing and maintaining medical		
records).		

### D- <u>General Skills</u> Practice-Based Learning and Improvement

ILOs	Methods teaching/ learning	of	Methods of Evaluation
A. Perform practice-based improvement activities	-Case log		Procedure/case
using a systematic methodology (share in audit and risk	-Observation	and	presentation
management activities and use logbook).	supervision		-Log book and
	-Written &	oral	Portfolios
	communication		
B. Appraises evidence from scientific studies(journal	-Journal clubs		
club)	- Discussions	in	
	seminars	and	
	clinical rounds		

### **Interpersonal and Communication Skills**

ILOs	Methods of teaching/ learning	Methods of Evaluation
C- Elicit information using effective nonverbal, explanatory, questioning, and writing skills.	-Observation and supervision	Log book
D- Provide information using effective nonverbal, explanatory, questioning, and writing skills.	-Written and oral	
E- Write a report in common condition mentioned in A.A	communication	
F Work effectively with others as a member of a health care team or other professional group.		
G Present a case in common problems related to Basics of adverse reaction due to blood transfusion donors /patients		

### Professionalism

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ILOs	Methods of teaching/ learning	Methods of Evaluation
H- Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	Observation -Senior staff experience	Logbook
I- <b>Demonstrate a commitment</b> to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices	ехрепенсе	

### **Systems-Based Practice**

ILOs	Methods of teaching/ learning	Methods of Evaluation
J-Work effectively in relevant health care delivery settings	Observation	Logbook
and systems.	-Senior staff	
	experience	

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

**Time Schedule: First Part** 

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skills	General Skills
Describe the etiology, clinical picture, diagnosis and management of the following Adverse effects: related to blood donation and transfusion				
-*-Complication of blood donation				
<ul> <li>immediate vasovagal</li> <li>Delayed vasovagal</li> <li>Chest pain</li> <li>Citrate reaction</li> <li>Haematoma</li> <li>Painful arm</li> <li>Nerve irritation</li> <li>Nerve injury</li> <li>Arterial puncture</li> <li>Delayed bleeding</li> <li>Thrombophlebitis</li> </ul>	A	A	A-F	A-J
*Adverse effects of blood transfusion				
*Acute transfusion reactions	A	A	A-F	A-J

<ul> <li>transfusion reaction</li> <li>Post-transfusion purpura</li> <li>Transfusion associated graft-versus-host disease</li> <li>Delayed complications: transfusion transmitted infections</li> </ul>				
*Massive transfusion reaction	Α	Α	A-F	A-J

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

- 1. Didactic (lectures, seminars, tutorial)
- 2. Inpatient
- 3. Case presentation
- 4. Direct observation
- 5. journal club
- 6. Critically appraised topic.
- 7. Educational prescription
- 9. Clinical rounds
- 10. Senior staff experience
- 11. Postgraduate teaching

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

- 1. Extra Didactic (lectures, seminars, tutorial) according to their needs
- 2. Extra Laboratory work according to their needs

### 7. Course assessment methods:

### i. Assessment tools: i. Assessment tools:

- 1. Oral examination
- 2. Clinical examination
- 3. Written examination
- Objective structure clinical examination (OSCE)
- 5. Procedure/case Log book and Portfolios
- 6. Simulation
- 7. Record review (report)
- 8. Patient survey
- Check list evaluation of live or recorded performance

### 10.MCQ Exam

ii. Time schedule: At the end of First part

iii. Marks: 100 (50 marks for written+30 marks for practical exam+20

marks for oral exam)

ii. Time schedule: At the end of the first part

### 8. List of references

- i. Lectures notes
  - Course notes
  - Staff members print out of lectures and/or CD copies
- ii. Essential books
- 1-Egyptian national bood transfusion policy
- 2-Blood banks-Egyptian Red Crescent
- 3- Clinical Transfusion Practice (WHO)
- iii. Recommended books
- 1-Practical transfusion medicine
- 2- Transfusion medicine and hemostasis (clinical and laboratory aspect).
- 3- Laboratory and clinical transfusion medicine (basic blood bank practices).
  - iv. Periodicals, Web sites, ... etc
  - Journal of blood transfusion
  - v. Others

None

### 9. Signatures

Course Coordinator:	Head of the Department:
Prof. Dr Eman NasrEldin Mohamed	Prof. Dr Azza Mahmoud Ezz EL Din
Date:	Date:

### **Second Part**

### **Course 3: Transfusion medicine and blood banking**

- Name of department: Clinical Pathology
  - Faculty of medicine
  - Assiut University
  - **2021-2022/2022-2023**

### 1. Course data

- Course Title: Transfusion medicine and blood banking.
- Course code: TRM231B
- Specialty: Transfusion medicine
- Number of Credit points(CP) Didactic 24CP, (17.2%) practical 116CP. (82. 8%).total 140 (100%)credit points
- Department (s) delivering the course: Department of Clinical pathology- Faculty of Medicine-Assiut University.
  - Coordinator (s): Staff members of Clinical Pathology
     Department
  - Course coordinator: Prof. Eman Nasr Eldin Mohamed
  - **Assistant coordinator (s):**

Staff Member of Hematology Unit Staff Member of Immunology Unit Staff Member of Microbiology Unit

- Date last reviewed: 7/2021
- General requirements (prerequisites) if any: None
- Requirements from the students to achieve course ILOs are clarified in the joining log book.

### 2. Course Aims

- **2/1.** To enable candidates to keep with international standards of Transfusion Medicine by teaching high level of laboratory skills, in addition to update medical knowledge as well as laboratory experience and competence in the area of Blood Banking and Transfusion Medicine 2/2To enable the candidates of making appropriate referrals to a subspecialist
- **2/3.** To develop an understanding of the appropriate use and interpretation of patient/donor care related Blood Banking and **Transfusion Medicine** enabling
- **2/4. To become familiar** with the consultation role of the Blood Bank and Transfusion Medicine specialist in patient/donor care and research.
- **2/5. To provide candidates** with a glimpse of the current state of the art technology and equipment of laboratory testing in Blood Banking and Transfusion Medicine enabling.
- **2/6. To introduce candidates** to the basics of scientific medical research.

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

### **A-Knowledge and understanding**

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Describe the detailed knowledge of the following;	-Lectures -Laboratory	-Written, oral and practical
I- Blood Component Manufacturing Storage	work	examination
<ol> <li>Preparation of blood components from whole blood</li> <li>Products that may be collected using hemapheresis procedures</li> <li>Blood product anticoagulant/preservatives</li> <li>Storage conditions/expiration dates for each blood component.</li> <li>Preparation of components which require pooling/thawing</li> <li>Special processing techniques of leukoreduction/washing/volume</li> </ol>		- Log book

### reduction/irradiation

- 7. Metabolic changes that occur during storage
- 8. Plasma derivatives that are prepared commercially

### **II- Therapeutic apheresis**

Principles of apheresis technology Indications (ASFA Categories), risk and benefits Replacement fluids

Monitoring of patient and central venous canula

### **III-Stem cell collection & processing**

Donor preparative regimen

Collection techniques and complications

Cell count targets and engraftment monitoring

Processing and storage

Collection & processing

### IV- Blood transfusion in special conditions

### Transfusion therapy in special patients

- Hematology / Oncology
- Pediatric / neonatal
- Obstetric including intra uterine
- Cardiac surgery with CPB
- Burn patients & Trauma patients
- Transplantation: Stem cell / Bone marrow, Liver, Kidney, other
- Hemolytic disease of new born
- Pathophysiology
- Causative blood group antibodies
- Monitoring, Treatment & Prophylaxis

### Hemoglobinopathies

Classification, Pathophysiology, Diagnosis & Transfusion therapy

### • Immune hemolytic anemia

Warm, Cold, Drug induced hemolytic anemia Comprehensive investigations for haemolytic anemia Compatibility testing issues Compatibility testing issues

Special transfusion needs

### • Thrombocytopenia

Immune thrombocytopenic purpura

Thrombotic microangiopathies (Including HUS-TTP and

Disseminated Intravascular Coagulopathy)

Post transfusion purpura

Fetal and neonatal thrombocytopenia

HIV, HCV & other infection associated thrombocytopenia

Drug induced immune and nonimmune

thrombocytopenias

Heparin induced thrombocytopenia

Aplastic, myeloablative and post-transplant

thrombocytopenias

### Platelet refractoriness

Recognition and evaluation

Calculation of CCI and platelet recovery

Principles of HLA typing and platelet cross match

Selection of appropriate platelet product

### • Neutropenia

Classification, etiology and treatment

Granulocyte transfusion

### Clotting factor disorders

Principle of hemostasis & coagulation

Lab tests of coagulation status

Selection and dosage of factor preparations

Management of patients with inhibitors

### V-Transfusion alternatives

Synthetic and natural volume expanders

Hemoglobin solution, Perfluorochemicals, Fibrin glue,

Hemostatic agent

Autologous blood

Preoperative autologous deposit

Perioperative blood salvage

Acute normovolemic hemodilution

### VI- Blood Bank Management

Quality assurance and quality control

4.2.20.2 Automation in Transfusion Medicine Equipment procurement Writing policies and procedures Blood inventory management Maximal surgical blood order schedule Hospital transfusion committee	
B. Describe the indication, management, type of blood and blood component therapy related to following diseases and clinical conditions: Transfusion therapy in special patients: Hematology, oncology, pediatric, neonatal, obstetric including intra uterine, cardiac surgery with cob, burn patients & trauma patients, transplantation: stem cell / bone marrow, liver, kidney, other, hemolytic disease of new born, hemoglobinopathies ,immune hemolytic anemia, thrombocytopenia, platelet refractoriness, neutropenia and clotting factor disorders Apply quality in preparation and storage of blood components	
C. State update and evidence based Knowledge of conditioned mentioned in A&B.	
D. Memorize the facts and principles of the relevant basic and clinically supportive sciences related to Blood Bank and Transfusion Medicine  E. Mention the basic ethical and medicolegal principles	
revenant to the Blood Bank and Transfusion Medicine.  F. Mention the basics of quality assurance to ensure	
good clinical care in preparation and storage of blood components	
G. Mention the ethical and scientific principles of medical research	
H. State the impact of common health problems in the field of speciality on the society.	

### **B-** <u>Intellectual outcomes</u>

ILOs	Methods of teaching/	Methods of Evaluation
A. Correlates the facts of basic with clinical reasoning and indication of Transfusion Medicine and its certain diseases	Clinical rounds Senior staff experience Didactic (lectures, seminars, tutorial)	Procedure/case presentation Log book Written, oral and practical examination
<b>B. Demonstrate</b> an investigatory and analytic thinking (problem solving) approaches to common clinical situations related to Blood Bank and Transfusion Medicine		
C. <b>Design and present</b> cases, seminars in common problem in Blood Bank and Transfusion Medicine.		
D-Formulate management plans and alternative decisions in different situations in the field of the Blood Bank and Transfusion Medicine.		

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

ILOs	Methods of	Methods of
	teaching/	Evaluation
	learning	1 1 1 0
A- Demonstrate an investigatory and analytic	-Didactic; -Lectures	-log book & portfolio
thinking approach to the following conditions:	-Clinical	-MCQ
related to clinical Blood Bank and Transfusion	rounds	examination
Medicine.	-Seminars	-formative
i.e <u>Laboratory principles:</u> General laboratory	-Clinical	assessment
techniques, procedures and safety.  Blood donation	rotations	
Donor Selection	(service	
Phlebotomy selection and perform aspetic	teaching)	
precautions		
Donor reactions Management.		
Apheresis – donor and therapeutic		
Perform the procedure independently		
Select proper patient		
Select proper machine		
Preparation of replacement fluids and monitor		
the patient/donor		
Component preparation.		
Product manipulation such as Leucocyte		
removal or Irradiation. Storage & quality control		
Pretransfusion testing & cross match.		
Resolve difficult in Blood group and cross		
matching problems.		
Transfusion Transmitted infection screening		
Screening for various markers such as HIV, HCV, HBsAg, Syphilis.		
Methodology such as Elisa, spot, rapid,		
automated analyzer		
NAT techniques such as PCR, TMA.		
Quality control/ records		
Quality control of components, equipment,		
reagents.		
Quality assurance.		
Development of documents, SOPs, Regulatory		
compliance		

B. <b>Recommend</b> the following invasive non invasive diagnostic laboratory procedures in Apheresis – donor and therapeutic Component preparation. Blood grouping & cross match Transfusion Transmitted infection screening Blood bank management	Clinical round with senior staff Observation Post graduate teaching Hand on workshops	-Procedure presentation - Log book - Chick list
C. Interpret the following invasive non invasive diagnostic laboratory procedures - mentioned in. C.B	Clinical round with senior staff	Procedure presentation - Log book - Chick list
D. Perform the following non invasive diagnostic laboratory procedures for Apheresis – donor and therapeutic Component preparation. Blood grouping & cross match Transfusion Transmitted infection screening Blood bank management  E. Carry out patient management plans for common conditions related to Blood Bank and Transfusion Medicine.  F. Use information technology to support	Clinical round with senior staff -Perform under supervision of senior staff Clinical round with senior staff	Procedure presentation - Log book - Chick list
patient care decisions and patient education in common clinical situations related to Blood Bank and Transfusion Medicine  G. Provide health care services aimed at preventing health problems related to Blood Bank and Transfusion Medicine. like: conditions		
mentioned in B.A.  H-Provide patient-focused care in common conditions related to Blood Bank and Transfusion Medicine, while working with health care professionals, including those from other disciplines like:  Conditions mentioned in B.A.  I. Write competently all forms of professional reports related to the Blood Bank and Transfusion Medicine. (lab reports).		

### <u>D - General Skills</u> Practice-Based Learning and Improvement

ILOs	Methods of	Methods of
	teaching/	Evaluation
	learning	
A. Perform practice-based improvement activities using	-Case log	Procedure/case
a systematic methodology(audit, logbook)	-Observation and	presentation
	supervision	-Log book and
	-Written & oral	Portfolios
	communication	
B. Appraises evidence from scientific studies(journal	Journal clubs	
club)	- Discussions in	
	seminars and	
	clinical rounds	
C. Conduct epidemiological Studies and surveys.	Clinical rounds	
D. Perform data management including data entry and	Senior staff	
analysis.	experience	
E. Facilitate learning of junior students and other		
health care professionals.		

### **Interpersonal and Communication Skills**

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Maintain <b>diagnostic</b> and ethically sound relationship	Simulations	Global rating
with patients.	Clinical round	Procedure/case
	Seminars	presentation
	Lectures	Log book
	Case presentation	Portfolios
	Hand on	Chick list
	workshops	and
G. Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H. Provide information using effective nonverbal, explanatory, questioning, and writing skills.		

I. Work effectively with others as a member of a health care team or other professional group.		
J. Present a case in common problems related to Immunology.	Clinical (practical)round Seminars	
K. Write a report in: -All investigations in immunology.		Chick list
L. Council patients and families about: -Viral hepatitis -Transmission of hepatitis C and B - HIV	Clinical round with senior staff	

### Professionalism

ILOs	Methods of teaching/ learning	Methods of Evaluation
M. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	Observation Senior staff experience Case taking	1. Objective structured clinical examination 2. Patient survey
N. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices		1. 360o global rating
O. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		1. Objective structured clinical examination 2. 3600 global rating

### **Systems-Based Practice**

ILOs	Methods of teaching/ learning	Methods of Evaluation
P. Work effectively in relevant health care delivery settings and systems.	Observation Senior staff experience	1. 360o global rating
Q. Practice cost-effective health care and resource allocation that does not compromise quality of care.		1. Check list evaluation of live or recorded performance
R. Assist patients in dealing with system complexities.		<ol> <li>360o global rating</li> <li>Patient survey</li> </ol>

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

**Time Schedule: Second part** 

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
Unit	(Module 1) Clin	ical Chemistry		
Blood Component Manufacturing Storage	А-Н	A-D	A-I	A-R
Therapeutic apheresis	A-H	A-D	A-I	A-R
Stem cell collection & processing	A-H	A-D	A-I	A-R
Transfusion therapy in special patients	А-Н	A-D	A-I	A-R
Transfusion therapy in Hemoglobinopathies	А-Н	A-D	A-I	A-R
Transfusion therapy in Immune hemolytic anemia	А-Н	A-D	A-I	A-R
Transfusion therapy in Thrombocytopenia	А-Н	A-D	A-I	A-R
Transfusion therapy in Platelet refractoriness	А-Н	A-D	A-I	A-R
Transfusion therapy in Neutropenia	А-Н	A-D	A-I	A-R
Transfusion therapy in Clotting factor disorders	А-Н	A-D	A-I	A-R
Transfusion alternatives	А-Н	A-D	A-I	A-R
Blood Bank Management	А-Н	A-D	A-I	A-R
Automation in Transfusion Medicine Equipment	А-Н	A-D	A-I	A-R

procurement				
Writing policies and procedures	A-H	A-D	A-I	A-R
Blood inventory management	A-H	A-D	A-I	A-R
Maximal surgical blood order schedule	А-Н	A-D	A-I	A-R
Hospital transfusion committee	A-H	A-D	A-I	A-R

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

- 1-Didactic: Lectures.
- 2-Seminars.
- 3-Service teaching.
- 4-Post graduate teaching
- 5-hand on work shops
- 6-Case presentation
- 7-Simulations

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

- 1-Didactic: Lectures.
- 2-Seminars.
- 3-Service teaching.
- 4-Post graduate teaching
- 5-hand on work shops
- 6-Case presentation
- 7-Simulations

### 7. Course assessment methods:

- i. Assessment tools:
- Clinical examination
- Written and oral examination
- Chick list
- > log book & portfolio
- Procedure/case presentation
- > MCQ examination
- ➤ Objective structured clinical examination
- Check list evaluation of live or recorded performance
- Patient survey
- > 3600 global rating
- ii. Time schedule: at end of second part
- iii. Marks: 1200 marks
- -Written exam 480 marks,
- -Oral exam 220 marks,
- -Practical exam 500 mark

### 8. List of references

- 8. List of references
  - i. Lectures notes
    - Course notes
    - Staff members print out of lectures and/or
       CD copies
  - ii. Essential books
  - 1-Egyptian national bood transfusion policy
  - 2-Blood banks-Egyptian Red Crescent
  - 3- Clinical Transfusion Practice (WHO)
  - iii. Recommended books
  - 1-Practical transfusion medicine

2-transfusion medicine and hemostasis (clinical and laboratory aspect).

3-Laboratory and clinical transfusion medicine (basic blood bank practices).

iv. Periodicals, Web sites, ... etc

- Journal of blood transfusion
- v. Others

None

v. Others: None

9. Signatures				
Course Coordinator: Prof. Dr Eman Nasr Eldin Mohamed	Head of the Department: Prof Dr Azza Mahmoud Ezz EL Di			
Date:	Date:			

# ANNEX 2 Program Academic Reference Standards (ARS)

### 1- Graduate attributes for master degree in Transfusion Medicine

# The Graduate (after residence training and master degree years of study) must:

- **1-** Have the capability to be a scholar, understanding and applying basics, methods and tools of scientific research and clinical audit *in Transfusion Medicine*.
- **2-** Appraise and utilise scientific knowledge to continuously update and improve clinical practice in related speciality.
- **3-** Acquire sufficient medical knowledge in the basic biomedical, clinical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in patient care in the field of *Transfusion Medicine*.
- **4-** Provide patient care that is appropriate, effective and compassionate for dealing with common health problems and health promotion using evidence-based and updated information.
- **5-** Identify and share to solve health problems in his speciality.
- **6-** Acquire all competencies —including the use of recent technologiesthat enable him to provide safe, scientific, and ethical and evidence based clinical care including update use of new technology in *Transfusion Medicine*.
- **7-** Demonstrate 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.

- **8-** Function as supervisor, and trainer in relation to colleagues, medical students and other health professions.
- **9-** Acquire decision making capabilities in different situations related to *Transfusion Medicine*.
- **10-** Show 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.
- **11-** Be aware of public health and health policy issues and share in system-based improvement of health care.
- 12- Show appropriate attitudes and professionalism.
- **13-** Demonstrate skills of lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages in *Transfusion Medicine*. or one of its subspecialties.

# 2- - Competency based Standards for clinical master degree graduates in Transfusion Medicine.

### 2.1- Knowledge and understanding

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

- **2-1-A-** Established basic, biomedical, clinical, epidemiological and behavioral sciences related conditions, problem and topics.
- **2-1-B-** The relation between good clinical care of common health problems in the speciality and the welfare of society.
- **2-1-C-** Up to date and recent developments in common problems related to *Transfusion Medicine*.
- **2-1-D-** Ethical and medicolegal principles relevant to practice in *Transfusion Medicine*.
- **2-1-E** -Quality assurance principles related to the good medical practice in *Transfusion Medicine*.
- **2-1-F-** Ethical and scientific basics of medical research.

### 2.2- Intellectual skills:

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

- **2-2-A-** Correlation of different relevant sciences in the problem solving and management of common diseases of *Transfusion Medicine*.
- **2-2-B-** Problem solving skills based on data analysis and evaluation (even in the absence of some) for common clinical situations related to *Transfusion Medicine*.
- **2.2- C-** Demonstrating systematic approach in studying clinical problems relevant to *Transfusion Medicine*.
- **2-2-D-** Making alternative decisions in different situations *Transfusion Medicine*.

### 2.3- Clinical skills

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

- **2-3-A** Provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.
- **2-3-B-** Demonstrate patient care skills relevant to *Transfusion Medicine*. for patients with common diseases and problems.
- **2-3- C** Write and evaluate reports for situations related to the field of *Transfusion Medicine.*.

### 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-** Demonstrate 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 all information sources and technology to improve his practice.
- **2-4-C-** Demonstrate skills of teaching and evaluating others.
  - Competency-based objectives for Interpersonal and Communication Skills
- **2-4-D-** Demonstrate 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-** Demonstrate professionalism behaviors, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.
  - **♣** 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-** Demonstrate skills of effective time management.
- **2-4-H** Demonstrate skills of self and continuous learning.

# Annex 3, Methods of teaching/learning

### Annex 3, Methods of teaching/learning

	Patien t care	Medical knowledg e	Practice- based learning/ Improveme nt	Interpersonal and communicatio n skills	m	Systems- based practice
Didactic (lectures, seminars, tutorial)	X	X		X	X	Х
journal club,	Х	Х	Х			
Educational prescription	Х	Х	Х	Х	Х	Х
Present a case (true or simulated) in a grand round		Х	X	Х	Х	
Observation and supervision	Х		Х	Х	Х	Х
conferences		Х	Х	Х		Х
Written assignments	Х	Х	Х	Х	Х	Х
Oral assignments	Х	Х	X	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 Master Degree students.

	Practica I skills		Intellectu al	General skills			
	Patient care	К	l	Practice- based learning/ Improveme nt	Interperson al and communica tion skills	lism	Systems -based practice
Record review	Х	X	Х		Х	Х	Х
Checklist	Х				Х		
Global rating	Х	Х	Х	Х	Х	Х	Х
Simulations	Х	X	Х	Х	Х	Х	
Portfolios	Х	X	Х	Х	Х		
Standardized oral examination	Х	X	Х	Х	Х		Х
Written examination	Х	Χ	Х	Х			Х
Procedure/ case log	Х	X					
OSCE	Х	X	Х	X	X	X	Х

# Annex 4, Glossary of Master Degree doctors 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 MSc 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 MSc doctor's performance on checklists and provide feedback for history taking, physical examination, and communication skills. Physicians may also rate the MSc doctor's performance.
  - ❖ Objective Structured Clinical Examination (OSCE) A series of stations with standardized tasks for the MSc doctors to perform. Standardized patients and other assessment methods often are combined in an OSCE. An observer or the standardized patient may evaluate the MSc doctors.
  - Procedure or Case Logs MSc 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 a MSc 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 MSc doctors, faculty, nurses, clerks, and other clinical staff evaluate MSc doctors from different perspectives using similar rating forms.
- ❖ Portfolios A portfolio is a set of project reports that are prepared by the MSc doctors to document projects completed during the MSc 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 MSc 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 MSc doctors.

## Annex 5, program evaluation tools

By whom	Method	Sample
Quality Assurance Unit	Reports	#
	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 الماجستير مع المعايير
الأكاديمية المعتمدة من كلية الطب 🗌 جامعة أسيوط لدرجة الماجستير في طب نقل
الدم

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

#### 1- Graduate attributes

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
1- Have the capability to be a scholar, understanding and applying basics, methods and tools of scientific research and clinical audit in <i>Transfusion Medicine</i> .	<ul> <li>۱ - إجادة تطبيق أساسيات و منهجيات</li> <li>البحث العلمي واستخدام أدواته المختلفة</li> </ul>
2- Appraise and utilise scientific knowledge to continuously update and improve clinical practice in <i>Transfusion Medicine</i> .	٢ –تطبيق المنهج التحليلي واستخدامه في مجال التخصص
<ul> <li>3- Acquire sufficient medical knowledge in the basic biomedical, clinical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in patient care in <i>Transfusion Medicine</i></li> <li>4- Provide patient care that is appropriate, effective and compassionate for dealing with common health problems and health promotion using evidence-based and update information.</li> </ul>	٣-تطبيق المعارف المتخصصة و دمجها مع المعارف ذات العلاقة في ممارسته المهنية ٤-إظهار وعيا بالمشاكل الجارية و الرؤى الحديثة في مجال التخصص
5- Identify and share to solve health problems in <i>Transfusion Medicine</i> .	٥-تحديد المشكلات المهنية و إيجاد حلولا لها
6- Acquire all competencies that enable him to provide safe, scientific, ethical and evidence based clinical care	٦-إتقان نطاق مناسب من المهارات المهنية المتخصصة، واستخدام الوسائل

including update use of new technology in <i>Transfusion Medicine</i> .  7- Demonstrate 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.  8- Function as supervisor, and trainer in	التكنولوجية المناسبة بما يخدم ممارسته المهنية 7-التواصل بفاعلية و القدرة على قيادة فرق العمل
relation to colleagues, medical students and other health professions.	
9- Acquire decision making capabilities in different situations related to <i>Transfusion Medicine</i> .	٨-اتخاذ القرار في سياقات مهنية مختلفة
10- Show 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.	9 – توظيف الموارد المتاحة بما يحقق أعلي استفادة و الحفاظ عليها
11- Be aware of public health and health policy issues and share in system-based improvement of health care.	<ul> <li>١٠ - إظهار الوعي بدوره في تنمية المجتمع</li> <li>و الحفاظ على البيئة في ضوء</li> <li>المتغيرات العالمية و الإقليمية</li> </ul>
12- Show appropriate attitudes and professionalism.	<ul><li>١١ - التصرف بما يعكس الالتزام بالنزاهة و المصداقية و الالتزام بقواعد المهنة</li></ul>
13- Demonstrate skills of lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages in <i>Transfusion Medicine</i> or one of its subspecialties.	۱۲ - تنمية ذاته أكاديميا و مهنيا و قادرا علي التعلم المستمر

#### 2. Academic standard

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
2.1.A -Established basic, biomedical, clinical, epidemiological and behavioral sciences related conditions, problems and topics.	<ul> <li>١-١-أ-النظريات و الأساسيات المتعلقة بمجال التعلم وكذا في المجالات ذات العلاقة.</li> </ul>
2.1.B- The relation between good clinical care of common health problems in <i>Transfusion Medicine</i> and the welfare of society.	<ul> <li>١-٢ -ب-التأثير المتبادل بين الممارسة المهنية</li> <li>وانعكاسها علي البيئة.</li> </ul>
2.1. C- Up to date and recent developments in common problems related to <i>Transfusion Medicine.</i> .	٢-١-ج-التطورات العلمية في مجال التخصص.
2.1. D- Ethical and medicolegal principles relevant to practice in the <i>Transfusion Medicine</i>	<ul> <li>١-٢ -د -المبادئ الأخلاقية و القانونية للممارسة</li> <li>المهنية في مجال التخصص.</li> </ul>
2.1. E-Quality assurance principles related to the good medical practice in <i>Transfusion Medicine</i> .	<ul> <li>١-٢ - ه - مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص</li> </ul>
2.1. F- Ethical and scientific basics of medical research.	٢-١-و - أساسيات وأخلاقيات البحث العلمي
<ul> <li>2.2. A-Correlation of different relevant sciences in the problem solving and management of common diseases of <i>Transfusion Medicine</i>.</li> <li>2.2. B- Problem solving skills based on data analysis and evaluation (even in the absence of some) for common clinical situations related to <i>Transfusion Medicine</i>.</li> </ul>	٢-٢-أ- تحليل و تقييم المعلومات في مجال التخصص والقياس عليها لحل المشاكل

2.2. B- Problem solving skills based on data analysis and evaluation (even in the absence of some) for common clinical situations related to <i>Transfusion Medicine</i> .	٢-٢-ب- حل المشاكل المتخصصة مع عدم توافر بعض المعطيات
2.2. A-Correlation of different relevant sciences in the problem solving and management of common diseases of <i>Transfusion Medicine</i> .	٢-٢-ج- الربط بين المعارف المختلفة لحل المشاكل المهنية
2.2. C- Demonstrating systematic approach in studying clinical problems relevant to the <i>Transfusion Medicine</i> .	<ul><li>٢-٢-د- إجراء دراسة بحثية و /أو كتابة دراسة</li><li>علمية منهجية حول مشكلة بحثي</li></ul>
2.4.A-Demonstrate 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	٢-٢هـ- تقييم المخاطر في الممارسات المهنية في مجال التخصص
2.4.A-Demonstrate practice-based learning and Improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific improvements in evidence, patient care and risk management	٢-٢-و - التخطيط لتطوير الأداء في مجال التخصص
2.2.D- Making alternative decisions in different situations in the field of <i>Transfusion Medicine.</i> .	٢-٢-ز - اتخاذ القرارات المهنية في سياقات مهنية متنوعة
2.3.A- provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.	٢-٣-أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص

2.3.B- Demonstrate patient care skills	
relevant to <i>Transfusion Medicine</i> for	
patients with common diseases and	
problems.	
2.3.C- Write and evaluate reports for	٢-٣-ب- كتابة و تقييم التقارير المهنية
Situation related to <i>Transfusion Medicine</i> .	ا ب ب ب عدب و عييم العدرير المهنية
2.3.A- provide patient care that	٢-٣-ج- تقييم الطرق و الأدوات القائمة في مجال
compassionate, appropriate, and	التخصص
effective for the treatment of health	التخصيص
problems and the promotion of	
health.	
2.3.B- Demonstrate patient care skills	
relevant to that speciality for	
patients with common diseases and	
•	
problems.	٤
2.4.D- Demonstrate interpersonal and	٢-٤-أ التواصل الفعال بأنواعه المختلفة
communication skills that result in	
effective information exchange and	
teaming with patients, their families,	
and other health professionals.	
2.4.A-Demonstrate practice-based	٢-٤-ب- استخدام تكنولوجيا المعلومات بما يخدم
learning and improvement skills that	
investigation and involves	الممارسة المهنية
evaluation of their own patient care,	
appraisal and assimilation of	
scientific evidence, improvements in	
•	
patient care and risk management	
2.4.B- Use all information sources and	
technology to improve his practice.	
2.4.A-Demonstrate practice-based	٢-٤-ج- التقييم الذاتي وتحديد احتياجاته التعلمية
learning and improvement skills that	ټ. انه د انه
involves investigation and	السخصية
evaluation of their own patient care,	
appraisal and assimilation of	

scientific evidence, improvements in patient care and risk management 2.4.B- Use all information sources and technology to improve his practice. 2.4.E-Demonstrate professionalism behavior, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.	
2.4.A-Demonstrate 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.	۲-٤-د- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
2.4. C- Demonstrate skills of teaching and evaluating others.	٢-٤-هـ وضع قواعد ومؤشرات تقييم أداء الآخرين
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.	٢-٤-و - العمل في فريق ، وقيادة فرق في سياقات مهنية مختلفة
2.4.G- Demonstrate skills of effective time management.	٢-٤-ز – إدارة الوقت بكفاءة
2.4.H- Demonstrate skills of self and continuous learning.	٢-٤-ح- التعلم الذاتي و المستمر

### Comparison between ARS and ILOS for master degree in Clinical pathology.

(ARS)	(ILOs)
2-1-A- Established basic, Biomedical, clinical, epidemiological and behavioral sciences related conditions, problem and topics.	<ul> <li>2-1- Knowledge and understanding</li> <li>2-1-A- Explain the essential facts and principles of relevant basic sciences including, basic microbiology and clinical parasitology related to Transfusion Medicine.</li> <li>2-1-B- Mention essential facts of clinically supportive sciences including basic microbiology and clinical parasitology related to Transfusion Medicine.</li> <li>2-1-C- Demonstrate sufficient knowledge of etiology, clinical picture, diagnosis, prevention and treatment of the common diseases and situations related to Transfusion Medicine.</li> </ul>
<b>2-1-B</b> The relation between good clinical care of common health problem in <i>Transfusion Medicine</i> and the welfare of society.	<b>2-1-H-</b> State the impact of common health problems in <i>Transfusion Medicine</i> on the society and how good clinical practice improve these problems.
<b>2-1-C-</b> Up to date and recent developments in common Problems related to <i>Clinical pathology</i> .	<b>2-1-C-</b> Demonstrate sufficient knowledge of etiology, clinical picture, diagnosis, prevention and treatment of the common diseases and situations related to <i>Transfusion Medicine</i> .

	<b>2-1-D-</b> Give the recent and update developments in the pathogenesis, diagnosis, prevention and treatment of common diseases related to <i>Transfusion Medicine</i> .
<b>2-1-D-</b> Ethical and medico legal Principles relevant to practice in <i>Transfusion Medicine</i> .	<b>2-1-E-</b> Mention the basic ethical and medico legal principles that should be applied in practice and are relevant to <i>Transfusion Medicine</i> .
<b>2-1-E</b> -Quality assurance principles related to the good medical practice in <i>Transfusion Medicine</i>	<b>2-1-F-</b> Mention the basics and standards of quality assurance to ensure good clinical practice in <i>Transfusion Medicine</i> .
<b>2-1-F-</b> Ethical and scientific basics of medical research.	<b>2-1-G-</b> Mention the ethical and scientific principles of medical research methodology.
2-2- Intellectual skills:	2-2- Intellectual skills:
<b>2-2-A-</b> Correlation of different relevant sciences in the problem solving and management of common diseases of the <i>Transfusion Medicine</i> .	<b>2-2-A-</b> Correlate the facts of relevant basic and clinically supportive sciences with clinical reasoning, diagnosis and management of common diseases of the <i>Transfusion Medicine</i> .
<b>2-2-B-</b> Problem solving skills based on data analysis and evaluation (even in the absence of some) for common clinical situations related to <i>Transfusion Medicine</i> .	<b>2-2-B-</b> Demonstrate an investigatory and analytic thinking approach (problem solving) to common clinical situations related to <i>Transfusion Medicine</i> .

2-2-C- Design and /or present a case or **2-2-C-** Demonstrating systematic review (through seminars/journal approach in studying clinical problems relevant to the clubs.) in one or more of Transfusion Medicine field. common clinical problems relevant to the *Transfusion* Medicine field. 2-2-D Making alternative decisions in 2-2-D- Formulate management plans and alternative decisions in different situations in the field of the Transfusion Medicine. different situations in the field of

the Transfusion Medicine.

Continue	[Caretino and
Continuous	Continuous
(ARS)	(ILOs)
2-3- Clinical skills:	2/3/1/Practical skills (Patient Care :)
<b>2-3-A-</b> Provide patient care that is compassionate, appropriate, and effective for the	<b>2-3-1-A-</b> Obtain proper history and examine patients in caring and respectful behaviors.
treatment of health problems and the promotion of health.	<b>2-3-1-B-</b> Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgment for
<b>2-3-B-</b> Demonstrate patient care skills relevant to that	common conditions related to <i>Transfusion Medicine</i> .
Transfusion Medicine for patients with common diseases and problems.	<b>2-3-1-C-</b> Carry out patient management plans for common conditions related to <i>Transfusion Medicine</i> .
	<b>2-3-1-D-</b> Use information technology to support patient care decisions and patient education in common clinical situations related to <i>Transfusion Medicine.</i>
	<b>2-3-1-E-</b> Perform competently non invasive and invasive procedures considered essential for the <i>Transfusion Medicine</i> .
	<b>2-3-1-F-</b> Provide health care services aimed at preventing health problems related to <i>Transfusion Medicine</i> .
	<b>2-3-1-G-</b> Provide patient-focused care in common conditions related to <i>Clinical pathology</i> , while working with health care professionals, including those from other disciplines.
<b>2-3-C-</b> Write and evaluate reports for situations related to the field of <i>Transfusion</i>	-3-1-H Write competently all forms of professional reports related to the
field of <i>Transfusion Medicine.</i>	Transfusion Medicine. (lab reports, experiments reports, Component

	therapy).
2-4- General skills	2/3/2 General skills
2-4-A- Demonstrate 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	<ul> <li>2-3-2-A- Perform practice-based improvement activities using a systematic methodology (share in audits and risk management activities and use logbooks).</li> <li>2-3-2-B- Appraises evidence from scientific studies.</li> <li>2-3-2-C- Conduct epidemiological studies and surveys.</li> </ul>
<b>2-4-B-</b> Use all information sources and technology to improve his practice.	<ul> <li>2-3-2-C- Conduct epidemiological studies and surveys.</li> <li>2-3-2-D.Perform data management including data entry and analysis and using information technology to manage information, access online medical information; and support their own education.</li> </ul>
<b>2-4-C-</b> Demonstrate skills of teaching and evaluating others.	<b>2-3-2-E-</b> Facilitate learning of students other health care professionals including their evaluation and assessment.
2-4-D- Demonstrate 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-F- Maintain therapeutic and relationship with patients.</li> <li>2-3-2-G- Elicit information using effective nonverbal, explanatory, questioning, and writing skills.</li> <li>2-3-2-H- Provide information using effective nonverbal, explanatory, questioning, and writing skills.</li> <li>2-3-2-I- Work effectively with others as a member of a health care team or</li> </ul>

	other professional group.
2-4-E-Demonstrate professionalism behaviors, 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-J- Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.</li> <li>2-3-2-K- Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices.</li> </ul>
	<b>2-3-2-L</b> -Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.
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	2-3-2-M-Work effectively in relevant health care delivery settings and systems including good administrative and time management
resources to provide care that is of optimal value.	<b>2-3-2-N-</b> Practice cost-effective health care and resource allocation that does not compromise quality of care.
	<b>2-3-2-O</b> - Assist patients in dealing with system complexities.
<b>2-4-G</b> - Demonstrate skills of effective time management	2-3-2-M-Work effectively in relevant health care delivery settings and systems including good administrative and time management
<b>2-4-H-</b> Demonstrate skills of self and continuous learning.	<b>2-3-2-A-</b> Perform practice-based improvement activities using a systematic methodology (share in audits and risk management activities and use logbooks).

### III-Program matrix Knowledge and Understanding

Course	Program covered ILOs							
	2/1 2/1/ 2/1/ 2/1/ 2/1/ 2/1/ 2/1/							2/1/
	/A	В	С	D	E	F	G	Н
Course 1: Basics of Transfusion medicine	✓	<b>√</b>						
Course 2 : Emergency in Transfusion Medicine			✓	✓	✓	✓		
Course3: Transfusion medicine and blood banking	<b>√</b>	<b>√</b>	✓	✓	✓	✓	✓	✓

### Intellectual

Course	Program covered ILOs							
Course	2/2/A	2/2/B	2/2/C	2/2/D				
Course 1: Basics of Transfusion Medicine	✓	✓	✓	✓				
Course 2: Emergency in Transfusion medicine	✓	✓						
Course3: Transfusion medicine and blood banking	✓	✓	✓	<b>√</b>				

### **Practical Skills (Patient Care)**

Course	Program covered ILOs								
904.150	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: Basics of Transfusion Medicine	<b>√</b>	<b>✓</b>	<b>✓</b>	<b>√</b>	<b>✓</b>	<b>✓</b>	<b>√</b>	<b>✓</b>	
Course 2: Emergency in Transfusion medicine	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>		<b>√</b>	
Course3: Transfusion medicine and blood banking	<b>√</b>	<b>✓</b>	<b>√</b>	<b>√</b>	<b>✓</b>	<b>√</b>	<b>√</b>	<b>√</b>	

#### **General Skills**

	Program covered ILOs									
Course	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: Basics of Transfusion Medicine	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	✓	<b>~</b>	✓	<b>✓</b>		
Course 2: Emergency in Transfusion medicine	<b>√</b>	<b>&gt;</b>	<b>√</b>	<b>~</b>	<b>~</b>	<b>✓</b>	<b>√</b>	✓		
Course3: Transfusion medicine and blood banking	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>✓</b>	✓	✓		

### **General Skills (cont.)**

Course	Program covered ILOs								
GG4.15C	2/3/2/1	2/3/2/J	2/3/2/K	2/3/2/L	2/3/2/M	2/3/2/N	2/3/2/0		
Course 1: Basics of Transfusion Medicine	<b>*</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>√</b>	<b>✓</b>		
Course 2: Emergency in Transfusion medicine	<b>√</b>	<b>√</b>							
Course3: Transfusion medicine and blood banking	<b>√</b>	✓	✓	✓	<b>√</b>	✓	<b>√</b>		

# Annex 7, Additional information:

- Example:
- Department information:
- Staff members:
- Opportunities within the department:
- Department quality control insurance for completing the program:

(End of the program specifications)