

Syllabus and Curriculum
of
Diploma in Blood Transfusion Technician
course

(To be implemented From 2015 - 16 session)

Uttar Pradesh State Medical Faculty, Lucknow.

Index

• Objectives of the course.....	3-3
• Outline of curriculum of ‘Diploma in Blood Transfusion Technician’ course.....	4-7
• Eligibility criteria & duration of the course.....	8-8
• Scheme of examination.....	9-10
• Schedule of the course.....	11-13
• Details of first year course curriculum.....	14-19
• Details of Second year course curriculum.....	20-25

OBJECTIVES OF THE COURSE

To prepare a **Blood Transfusion technician** who –

- Is able to make blood bank a safe place for all (Donors, recipients, doctors and technicians).
- Can carry complete process of blood donation.
- Is able to process the donated blood i.e. can screen, separate into components, store, maintain quality of stored blood.
- Can issue the stored blood/component.
- Is aware of laws and rules related to transfusion medicine and can perform all related paper work & record keeping.
- Is able to deal with common adverse reaction during donation & transfusion.
- Can motivate community for the safe blood donation.

Outline of Curriculum
of
Diploma in Blood Transfusion Technician course

FIRST YEAR

THEORY (Classes: 9 AM to 12 Noon)

First paper : Syllabus covers -

1. General Anatomy & Physiology (Cytology, Histology, Osteology and only basics of all organ systems of body except haematological system).
2. Only basics of relevant Pathology, Pharmacology & Microbiology.

Second paper : Syllabus covers -

1. Detailed Anatomy, Physiology & Pathology of haematological system.
2. Details of Equipment management & chemicals used in blood bank.
3. Hand hygiene & prevention of cross infection.
4. Basic life support (BLS) & Cardio-pulmonary resuscitation (CPR).

FIRST YEAR

PRACTICAL (Classes: 1 PM to 4 PM)

Practical classes will be after lunch; from 1 PM to 4 PM.

Students must present in the hospital/ blood bank for practicals.

During first year, they should be there only as “Observers” in blood bank lab.

Following subjects must be taught; though there will not be any exam from these-

1. Basic Computer skills.
2. Basic English.
2. **Soft skills like** - Interpersonal relationship skills & moral education.

Outline of Curriculum of Diploma in Blood Transfusion Technician course

SECOND YEAR

THEORY (classes:9 AM to 12 Noon)

First paper : Syllabus covers -

1. Only relevant surgical & medical conditions.
2. Nursing Procedures like vital recording, IM/IV/SC injection, Oxygen therapy, Nebulization, IV infusion.
3. Common laboratory tests & serology related to blood transfusion.

Second paper : Syllabus covers -

1. Details of diseases of haematology.
2. Details of blood donation, its processing, storage, issuance & whole blood/component transfusion & biomedical waste management.
3. Drugs used in Blood Transfusion & BLS.
4. Community involvement in transfusion.

SECOND YEAR

PRACTICAL (classes:9 AM to 12 Noon)

Practical exams syllabus should cover-

- Hands on training for Screening of Donor.
- Hands on training for Safe collection of blood from donor.
- Hands on training for Cross matching.
- Hands on training for Storage of blood.
- Hands on training for Serological tests done.
- Hands on Components preparation.
- Hands on training for Quality control in blood bank.
- Hands on training for Sterilization & aseptic technics & practices used in blood bank.
- Hands on training for record maintaining for donation, issue of blood.
- Hands on training for Transfusion reactions & their management.
- Hands on training for Safe disposal of discarded blood/blood product (Biomedical waste management).

ELIGIBILITY CRITERIA FOR ADMISSION & DURATION OF THE COURSE

COURSE DURATION:-

- It is 2 years, **full time** Diploma Course.

ELIGIBILITY:-

- Candidate must have passed 12th with
Physics, Chemistry, Biology

Or

Physics, Chemistry, Maths

with 35% marks in Intermediate exams.

(From UP board or any other recognised board).
- Candidate must have completed age of 17 years of age as on 31st December of admission year. There is no maximum age limit for the admission.

SCHEDULE OF EXAMINATION

FIRST YEAR

<u>Paper</u>	<u>Subjects</u>	<u>Mark</u>	<u>Internal Assessment Marks</u>	<u>Total Marks</u>	<u>Pass Marks</u>	<u>Duration of Exam.</u>
<u>First Paper Theory</u>	<p>1.General Anatomy & Physiology (Cytology, Histology, Osteology and only basics of all organ systems of body except haematological system).</p> <p>2.Only basics of relevant Pathology, Pharmacology & Microbiology.</p>	75	25	100	50	3 Hours
<u>Second Paper Theory</u>	<p>1.Detailed Anatomy, Physiology & Pathology of haematological/ system.</p> <p>2.Details of Equipment management & chemicals used in blood bank.</p> <p>3.Hand hygiene & prevention of cross infection.</p> <p>4.Basic life support (BLS) & Cardio-pulmonary resuscitation (CPR).</p>	75	25	100	50	3 Hours
<u>Practical</u>	Oral & Practical	75	25	100	50	3 Hours

SCHEDULE OF EXAMINATION

SECOND YEAR

<u>Paper</u>	<u>Subjects</u>	<u>Mark</u>	<u>Internal Assessment Marks</u>	<u>Total Marks</u>	<u>Pass Marks</u>	<u>Duration of Exam.</u>
<u>First Paper Theory</u>	<p>1.Only relevant surgical & medical conditions.</p> <p>2.Nursing Procedures like vital recording, IM/IV/SC injection, Oxygen therapy, Nebulization, IV infusion.</p> <p>3.Common lab tests & serology related to blood transfusion.</p>	75	25	100	50	3 Hours
<u>Second Paper Theory</u>	<p>1.Details of diseases of haematology.</p> <p>2.Details of blood donation, its processing, storage, issuance & whole blood/component transfusion & biomedical waste management.</p> <p>3..Drugs used in Blood Transfusion & BLS.</p> <p>4.Community involvement in tranfusion.</p>	75	25	100	50	3 Hours
<u>Practical</u>	Oral & Practical	75	25	100	50	3 Hours

SCHEDULE OF COURSE

(List of holidays, Total hours, Subject wise allotment of hours)

- **List of Holidays:-**

Sundays	- 52 days
Summer vacation	- 10 days
Winter vacation	- 10 days
Gazetted holidays	- 23 days
Preparatory holidays	- 10 days
<hr/>	
Total Holidays	- 105 days
<hr/>	

- **Total Hours :-**

Theory classes per day	- 3 Hours
Practical classes per day	- 3 Hours
Total hours per day	- 6 Hours
Total days & hours in One year (after deduction of holidays)	- 260 days or - 1560 Hours

SCHEDULE OF COURSE

Subject wise allotment of hours

FIRST YEAR

Theory (780 Hours) Practical (780 Hours)

<u>First Paper Theory</u>	1.General Anatomy & Physiology (Cytology, Histology, Osteology and only basics of all organ systems of body except haematological system).	160 Hrs
	2.Only basics of relevant Pathology, Pharmacology & Microbiology.	150 Hrs
<u>Second Paper Theory</u>	1.Detailed Anatomy, Physiology & Pathology of Haematological/ system.	100Hrs
	2.Details of Equipment management & chemicals used in blood bank.	230 Hrs
	3.Hand hygiene & prevention of cross infection.	30 Hrs
	4.Basic life support (BLS) & Cardio-pulmonary resuscitation (CPR).	40 Hrs
<u>Third Paper Practical</u>	As described in curriculum	780 Hrs
<u>Theory: Other Subjects</u> (These subjects must be taught; though there will not be any exam from these)	1.Basic Computer skills.	30 Hrs
	2.Basic English.	30 Hrs
	3.Soft skills like - Interpersonal relationship skills & moral education	10 Hrs

SCHEDULE OF COURSE

Subject wise allotment of hours

SECOND YEAR

Theory (780 Hours) Practical (780 Hours)

<u>First Paper Theory</u>	1. Only relevant surgical & medical conditions.	130 Hrs
	2. Nursing Procedures like vital recording, IM/IV/SC injection, Oxygen therapy, Nebulization, IV infusion.	20 Hrs
	3. Common lab tests & serology related to blood transfusion.	60 Hrs
<u>Second Paper Theory</u>	1. Details of diseases of haematology.	150 Hrs
	2. Details of blood donation, its processing, storage, issuance & whole blood/component transfusion & biomedical waste management.	300 Hrs
	3. Drugs used in Blood Transfusion & BLS.	60 Hrs
	4. Community involvement in transfusion.	60 Hrs
<u>Third Paper Practical</u>	As described in curriculum	780 Hrs

Details of Curriculum for First Year Diploma in Blood Transfusion Technician

PAPER 1st Theory	Topics	Hours.
1. General Anatomy & Physiology (Cytology, Histology, Osteology and only basics of all organ systems of body except haematological system).	1. General Orientation about parts of human body. Various terms used in Anatomy. Total numbers of bones, their names & location. Basic idea about organization of body ,from cell to organ systems.	06 Hrs
	2. Structure of Animal cell, Cell organelles & their functions.	06 Hrs
	3. Human tissue, types, structure & functions.	15 Hrs
	4. Osteology: Names, location, identification of all bones.	10 Hrs
	5. Skin & appendages.	02 Hrs
	6. GIT: : Location, Gross structure, various parts & their functions. (Microscopic structure is not required.)	20 Hrs
	7. Respiratory tract: Location, Gross structure, various parts & their functions. (Microscopic structure is not required.)	15 Hrs
	8. Urinary tract: Gross structure, various parts & their functions. (Microscopic structure is not required.)	05 Hrs
	9. Male reproductive system: Only gross structure & functions of different parts. (Microscopic structure is not required.)	05 Hrs
	10. Female reproductive system: Only gross structure & functions of different parts. (Microscopic structure is not required.)	05 Hrs
	11. Endocrine system: Hormones secreted by Pituitary, Thyroid, Parathyroid, Pancreas, Adrenal cortex, Adrenal medulla, Gonads & functions of different hormones. (Details of structure of these glands not required).	20 Hrs
	12. Gross structure of brain & spinal cord. Functions of different parts of brain & spinal cord.(Details not required.)	10 Hrs
	13. Gross structure & functions of sensory Organs - Eye, Ear, Nose, Tongue.(Details not required).	10 Hrs
	14. Basic gross structure of heart, vessels opening into heart & Leaving the heart. Arterial & Venous tree of body.	10 Hrs
	15. Lymphatic system: Structure & Functions.	05 Hrs
	16. Immune system: Components & various mechanisms of defense.	15 Hrs

Details of Curriculum for First Year Diploma in Blood Transfusion Technician

PAPER 1st Theory	Topics	Hours.
2.Only basics of relevant Pathology, Pharmacology & Microbiology.	1. Basic steps of Acute & chronic inflammation.	03 Hrs
	2. Basics of Necrosis & apoptosis.	03 Hrs
	3. Basics of Shock.	03 Hrs
	4. Modes of disease transmission & prevention of infection.	05 Hrs
	5. Sterilization & methods of sterilization used in hospitals.	20 Hrs
	6. Basic idea about types of Bacteria, Virus, Fungi.	20 Hrs
	7. Routes of drug administration.	02 Hrs
	8. Adverse effects & side effects of drugs.	02 Hrs
	9. Basic idea of Analgesics : Opioid & NSAIDs.	02 Hrs
	10. Basic idea of Drugs use in Cough & expectoration.	01 Hrs
	11. Basic idea of Drugs used in B. asthma & COPD.	02 Hrs
	12. Basic idea of Drugs used in GIT.	08 Hrs
	13. Basic idea of Anti Microbials.	20 Hrs
	14. Basic idea of Anti H-1 Histaminics & Corticosteroids.	04 Hrs
	15. Drugs used in Haematological system.	25 Hrs

Details of Curriculum for First Year Diploma in Blood Transfusion Technician

PAPER 2nd Theory	Topics	Hours.
1.Detailed Anatomy, Physiology & Pathology of Haematological/ system.	1. Composition of blood, functions of blood.	05 Hrs
	2. Plasma : Details of Composition, Details of Plasma proteins.	10 Hrs
	3. RBCs & Hb : Detailed structure & functions.	10 Hrs
	4. WBCs : TLC,DLC, detailed structure & functions.	10 Hrs
	5. Platelets : Detailed structure & functions.	05 Hrs
	6. Details of Hemostasis : bleeding & Coagulation.	10 Hrs
	7. Internal structure (Histology) of artery, vein & capillaries.	05 Hrs
	8. Various Hypes of blood groups,details of ABO & Rh blood groups & applied aspects related to blood grouping.	10 Hrs
	9. Basic pathology of anaemia : Micro/Macrocytic, Hypo/Normochromic, Hemolytic etc.	10 Hrs
	10. Basic pathology of Polycythemia .	03 Hrs
	11. Basic pathology of Leucocytosis, leucopenia, Basic idea of leukaemia & lymphoma.	07 Hrs
	12. Basic pathology of Thrombocytopenia.	03 Hrs
	13. Basic pathology of bleeding and coagulation disorders.	12 Hrs

Details of Curriculum for First Year Diploma in Blood Transfusion Technician

PAPER 2nd Theory	Topics	Hours.
2.Details of Equipment management & chemicals used in blood bank	1. <u>Related to screening of patient</u> : Weighing machine, Stethoscope, Sphygmomanometer, Hb count machine.	10 Hrs
	2. <u>Related to Donation area</u> : Blood collection monitor, bag, tubesealer , kit, Needle destroyer.	30 Hrs
	3. <u>Related to Cross match area</u> :Centrifuge, Rh viewbox, Incubator, Microscope..	20 Hrs
	4. <u>Storage Unit (untested)</u> :- Deep freezer (-70° to 80° C), BB regrigerator (2°-6° C).	10 Hrs
	5. <u>Storage Unit</u> :- Platelet incubator & agitator, Deep freezer (-30° to -40° C), BB refrigerator (2°C to 6°C).	10 Hrs
	6. <u>Sterilization & auto claving area</u> :- Autoclave, Hot air overs.	20 Hrs
	7. <u>Quality Control area</u> :- Laminar air flow.	10 Hrs
	8. <u>Component preparation area</u> :- BB centrifuge, Plasma expressor, Plasma thawing bath, Apheresis machine.	50 Hrs
	9. <u>Serology area</u> :- ELISA reader, ELISA washer & incubator, ELISA printer.	40 Hrs
	10. Chemicals related to blood donation, and storage.	30 Hrs.

**Details of Curriculum for First Year
Diploma in Blood Transfusion Technician**

PAPER 2nd Theory	Topics	Hours.
3.Hand hygiene & prevention of cross infection.	1. Hand hygiene & method of Hand washing.	15 Hrs
	2. Prevention of cross infection.	15 Hrs

PAPER 2nd Theory	Topics	Hours.
4.Basic life support (BLS) & Cardio-pulmonary resuscitation (CPR).	1. Code blue.	05 Hrs
	2. Details of basic life support (BLS) & Cardio-pulmonary resuscitation (CPR).	35 Hrs

Curriculum
for
Practical :- First Year
Diploma in Blood Transfusion Technician

Practical	Topics
	Observership for :-
	1. Screening of Donor.
	2. Safe collection of blood from donor.
	3. Cross matching.
	4. Storage of blood.
	5. Serological tests done.
	6. Components preparation.
	7. Quality control in blood bank.
	8. Sterilization & aseptic technics & practices used in blood bank.
	9. record maintaining for donation, issue of blood.
	10. Transfusion reactions & their management.
	11. Safe disposal of discarded blood/blood product (Biomedical waste management).
12. BLS and CPR.	

Details of Curriculum for Second Year Diploma in Blood Transfusion Technician

PAPER 1st Theory	Topics	Hours.
1.Only relevant surgical & medical conditions.	1. History taking. General examination of the patient. Filling Case-sheet. Common clinical words.	15 Hrs
	2. Hypertension:- Def, Causes, Pathology, Clinical features, Investigation & Management.	05 Hrs
	3. Hypotension :- Def, Causes, Pathology, Clinical features, Investigation & Management.	02 Hrs
	4. Diabetes mellitus :- Def, Causes, Pathology, Clinical features, Investigation & Management.	05 Hrs
	5. <u>Respiratory Tract</u> :- Pneumonia, Tuberculosis, B. asthma, COPD, Bronchiectasis, Collapse of lung, Pneumonitis, Pleural effusion, Pneumothorax, Empyema thoracis, Cancer lung.	20 Hrs
	6. <u>Diseases of GIT & Liver & GB</u> :-Reflux Oesophagitis, Peptic ulcers, Gastritis, Intestinal Obstruction, Hepatitis, Cirrhosis of liver, Cholecystitis.	15 Hrs
	7. <u>Diseases of Nervous system</u> :- Stroke, Meningo-encephalitis, Glasgow coma scale, Epilepsy, Head Injury.	20 Hrs
	8. <u>Diseases of Urinary tract</u> :- Urolithiasis, Benign prostatic hyperplasia.	08 Hrs
	9. <u>Endocrine system</u> :- Diabetes mellitus, hypo & Hyper thyroidism.	05 Hrs
	10. <u>Miscellaneous</u> :- Hypo & Hyper Natraemia, Hypo & Hyper Kalaemia, Hypo & Hyper Calcaemia.	05 Hrs
	11. <u>Infections diseases</u> :- TB, Typhoid, Malaria, Dengue fever, Leprosy, AIDS, Amoebiasis.	30 Hrs

Details of Curriculum for Second Year Diploma in Blood Transfusion Technician

PAPER 1st Theory	Topics	Hours.
2.Nursing Procedures like vital recording, IM/IV/SC injection, Oxygen therapy, Nebulization, IV infusion.	1. Temperature monitoring & Fever.	02 Hrs
	2. Pulse monitoring.	02 Hrs
	3. BP monitoring.	02 Hrs
	4. Respiration monitoring.	01 Hrs
	5. Types of Injection routes.	01 Hrs
	6. IM Injection.	01 Hrs
	7. IV Injection.	01Hrs
	8. SC Injection.	01 Hrs
	9. Oxygen Therapy.	03 Hrs
	10. Nebulization	03 Hrs
	11. IV Infusion (Also with infusion pump).	01 Hrs
	12. Care of Unconscious patient.	02 Hrs

PAPER 1st Theory	Topics	Hours.
3.Common lab tests & serology related to blood transfusion.	1.Details of techniques of Common lab tests & serology related to blood transfusion.	20 Hrs

Details of Curriculum for Second Year Diploma in Blood Transfusion Technician

PAPER 2nd Theory	Topics	Hours.
1.Details of diseases of haematology.	1. Anaemia :- Definition, Types, Causes, Clinical features & management.	20 Hrs
	2. Polycythemia :- Definition, Types, Causes, Clinical features & management.	05 Hrs
	3. Various types of leucocytosis :- Definition, Types, Causes, Clinical features & management.	15 Hrs
	4. Various types of leucopenia :-Definition, Types, Causes, Clinical features & management.	10 Hrs
	5. Basic of Platelet disorders :- Definition, Types, Causes, Clinical features & management.	10 Hrs
	6. Basic of Disorders of Bleeding & Coagulation system :- Definition, Types, Causes, Clinical features & management.	20 Hrs
	7. Basic of leukaemia :- Definition, Types, Causes, Clinical features & management.	10 Hrs
	8. Common Blood borne diseases :-AIDS, Hepatitis B, Hepatitis C,Malaria, Syphilis, & Others.	30 Hrs
	9. Details of transfusion reactions & its management.	30 Hrs

Details of Curriculum for Second Year Diploma in Blood Transfusion Technician

PAPER 2nd Theory	Topics	Hours.
2.Details of blood donation, its processing, storage, issuance & whole blood/component transfusion biomedical waste management.	1. Details of Screening of Donor.	20 Hrs
	2. Details of Safe collection of blood from donor.	30 Hrs
	3. Details of Cross matching.	10 Hrs
	4. Details of Storage of blood.	30 Hrs
	5. Details of Serological tests done.	30 Hrs
	6. Details of Components preparation.	50 Hrs
	7. Details of Quality control in blood bank.	30 Hrs
	8. Details of Sterilization & aseptic technics & practices used in blood bank.	30 Hrs
	9. Details of record maintaining for donation, issue of blood.	10 Hrs
	10. Details of Transfusion reactions & their management.	30 Hrs
	11. Details of Safe disposal of discarded blood/blood product (Biomedical waste management).	30 Hrs

**Details of Curriculum for Second Year
Diploma in Blood Transfusion Technician**

PAPER 2nd Theory	Topics	Hours.
3. Drugs used in Blood Transfusion & BLS.	1. Details of Drugs/Chemicals used in Blood Bank.	40 Hrs
	2. Use of Adrenaline/ Nor-adrenaline, Dopamine/ Dobutamine, Atropine, Anti arrhythmic drugs.	10 Hrs
	3. Use of DC shock & Use of Defibrillator.	10 Hrs

PAPER 2nd Theory	Topics	Hours.
4. Community involvement in transfusion.	1. Details of Community involvement in transfusion e.g. motivation of community etc.	60 Hrs

Curriculum
for
Practical :- Second Year
Diploma in Blood Transfusion Technician

	Topics
Practical	1. Hands on training for Screening of Donor.
	2. Hands on training for Safe collection of blood from donor.
	3. Hands on training for Cross matching.
	4. Hands on training for Storage of blood.
	5. Hands on training for Serological tests done.
	6. Hands on Components preparation.
	7. Hands on training for Quality control in blood bank.
	8. Hands on training for Sterilization & aseptic technics & practices used in blood bank.
	9. Hands on training for record maintaining for donation, issue of blood.
	10. Hands on training for Transfusion reactions & their management.
	11. Hands on training for Safe disposal of discarded blood/blood product (Biomedical waste management).