



**SYLLABUS DIPLOMA IN BLOOD BANK TECHNOLOGY**  
**First Year**

S. No	Subject	Distribution of Marks			
		Th	PR	Viva-voce	Total
Paper I	MICROBIOLOGY & BIOCHEMISTRY	100			100
Paper II	HEMATOLOGY	100			100
Paper III	GENERAL IMMUNOLOGY	100			100
Paper IV	BLOOD COMPONENTS&BLOOD DONATION	100			100
Paper V	Practical & Viva Voce		75	25	100
	<b>Total</b>				<b>500</b>

**SYLLABUS DIPLOMA IN BLOOD BANK TECHNOLOGY**  
**Second Year**

S.No.	Subject	Distribution of Marks			
		Th	PR	Viva-voce	Total
Paper I	Transfusion therapy	100	-	-	100
Paper II	Immunohaematology	100	-	-	100
Paper III	Quality control in Blood Banking and Legal aspect	100	-	-	100
Paper IV	Recent advances in blood banking techniques	100	-	-	100
Paper V	Practical & Viva Voce		75	25	100
	<b>Total</b>				<b>500</b>

लेखा अधिकारी  
वरिष्ठ आचार्य एवं विभागाध्यक्ष  
ह्यूमोहेमेटोलोजी एवं इन्फ्यूजन मेडिसिन  
सवाई मानसिंह विद्यापीठ

# Syllabus of Diploma in Blood Bank Technology

## FIRST YEAR

Sr. No.	Subjects
1	Microbiology and Biochemistry
2	Hematology
3	General Immunology
4	Blood donation, Blood components, Blood collection and Blood storage

### Microbiology and Bio chemistry

1. Introduction to microbiology, fundamental of microscopy, sterilization and disinfection.
2. Classification of micro organisms and their staining techniques.
3. Bacteriological media, pure cultures and cultural characteristics, bacteria of medical importance.
4. Transfusion transmitted infections, HIV, HCV, HBV, Malaria, syphilis.
5. ELISA, Rapid and other tests for diagnosis of transfusion transmitted infections.
6. Personal and laboratory bio safety, management of biomedical waste and viral inactivation.
7. Instrumentation principles : ph meter, colorimeter, spectrophotometer, electrophoresis equipment.
8. Bile salt, bile pigment and iron metabolism.

### Hematology

1. Normal erythropoiesis, leucopoiesis, formation and function of platelets.
2. Classification of anaemia, their laboratory diagnosis, hemoglobinopathy : beta thalassemia and sickle cells disease, G6PD deficiency, polycythemia.
3. Autoimmune hemolytic anaemia, classification, diagnosis, specificity of autoantibodies.
4. Coagulation mechanism, hemostasis, laboratory tests for coagulation, platelet disorders.
5. Haematological malignancies.
6. Bone marrow transplantation, peripheral stem cells, cord blood stem cells, cord blood banking.
7. Collection of blood samples, types of anticoagulants.
8. Complete hemogram, different methods of haemoglobin screening and estimation: copper sulphate, haematology analysers, sahli's cyanmethemoglobin and hemocue method, red cell indices.

### General Immunology

1. Principle of basic immunology, history, immunity.
2. Antigens : Immunogen, allo-antigen, soluble antigen, red cell antigen, epitopes.
3. Antibodies : Polyclonal antibodies, development of antibodies, structure of immunoglobulins, characteristics of immunoglobulins.
4. Monoclonal antibodies : Hybridoma technology, human monoclonal antibodies, applications of M Ab.
5. Antigen antibody reaction : antigen concentration, antibody concentration, enhancing media, other factors influencing antigen antibody reaction, immunoassays : ELISA.
6. Cells of immune system: Phagocytic cells, antigen presenting cells, T-cells, T-cells subsets, B-cells, CD markers, Flowcytometry for counting T&B cells.
7. Autoimmune disorders.
8. Complement system
9. HLA antigens, HLA Antibodies, HLA Serology, Histocompatibility matching : Molecular methods.

10. Molecular methods in immunology.
11. Immunology of transplantation.
12. Genetics of blood groups and their classification basics .....

### Blood Donation and Blood components

1. Selection of blood bags for component preparation, preparation of red cell concentrate, fresh frozen plasma, platelet concentrate, cryoprecipitate, washed red cells and frozen red cells.
2. Plasma fractionation : Principles, manufacturing of different plasma derivatives.
3. Types and method of preparation of component, testing labeling, storage and quality control.
4. Storage and transportation of blood components.
5. Preparation of leukoreduced blood products, leukocyte filter, principal of component extractors.
6. Metabolic changes in blood components during storage, release of cytokine during storage.
7. Inventory management and maintenance of blood stock
8. Irradiated blood components.
9. Blood substitute.
10. Measurement of factor VIII Level in FFP.
11. Measurement of fibrinogen level in FFP.
12. Sterility test on whole blood and platelet concentrates.
13. Measurement of pH and other platelet parameters.
14. Preparation of cryoprecipitate, peripheral blood stem cell.
15. Donor motivation, motivational techniques, social marketing, preparation of IEC Materials.
16. Donor recruitment and retention : Management to blood donation, type of blood donors, donor selection , medical interview and medical examination, screening for haemoglobin estimation, managing deffered blood donors, technique for conversion of first time donor into regular voluntary donor, donor felicitation.
17. Blood collection room equipment, their principle and use, emergency medicines, pre donation counseling, bleeding of the donor, post donation care and counseling.
18. Screening of blood units for mandatory test, discardation of infected units.
19. Blood donation drive : awareness programs prior to blood donation drive, visit of camp site, staff requirement, management of camp, transportation of blood units from camp site to blood bank.
20. Preservation of donated blood, blood preservation solution, additive solution.
21. Apheresis procedures, products, preparation of multiple products on cell separators, maintenance of cell separator equipment.
22. Autologous blood donation.

(सहायक प्राध्यापक)  
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इम्यूनोहीमेटोलोजी एवं ट्रांसफ्यूजन मेडिसिन  
सवाई मानसिंह विद्यापीठ, रायचूर

## Syllabus of Diploma in Blood Bank Technology

SECOND YEAR

Sr. No.	Subjects
1	Transfusion therapy



5. Calibration, validation and maintenance of blood bank equipment, QC of blood bank techniques, internal and external QC.
6. Organization of blood bank services, blood bank premises and infrastructure, regional blood transfusion centre and blood storage centers, blood bank management system.
7. Record keeping and reporting, haemovigilance.
8. Regulations for blood bank operation : Drugs and cosmetics law, national blood policy, standards in blood banking, licensing procedures.
9. Recruitment and training of blood bank personnel, proficiency testing.
10. Blood bank accreditation.
11. Ethical and legal considerations pertaining to transfusion practice, identification of blood stains, paternity testing, donor notification and counseling, look back programme, drugs and cosmetics act, accreditation, consumer protection act and others.

#### Recent Advances and Modern Biological Technique in Blood Banking

1. Automation and computerization, use of bar code.
2. Automated blood group and processing.
3. Automated infectious screening, nucleic acid testing, western blot, polymerase chain reaction (SSCCP, SSOP), Dot blot hybridization, apheresis, stem cell in blood banking.
4. Principle, methods relevance in transfusion medicine.
5. Blood substitutes
6. Glycerolisation to preserve RBCs.
7. EQUAS samples and their report.

#### REFERENCE BOOKS :

1. Modern blood banking and transfusion practices by Denise M. Harmenting, 5<sup>th</sup> Ed.
2. Transfusion medicine technical manual-DGHS, Ministry of Health and Family Welfare, Govt. of India, Second Ed. 2003.
3. Blood transfusion in clinical medicine by PL Mollison.
4. AABB Technical Manual, 17<sup>th</sup> Ec. AABB.
5. Compendium of transfusion medicine, RN Makroo.
6. Practical Hematology, J A Dacie and S M Lewis.
7. Basic Immunology, A K Abbas and A H Lichtman, Second Ed., Saunders Elsevier.
8. Essential Immunology, I Roitt, 8<sup>th</sup> Ed., Blackwell Scientific Publications.
9. Basic Molecular and Cell biology, David Latchman, BMJ Publishing group, 1997.
10. Voluntary blood donation program NACO Ministry of health and Family welfare, Govt. of India, New Delhi, 2007.
11. National guide book in blood donor motivation, NACO, Ministry of Health and Family Welfare, Govt. of India.
12. Standards for blood banks and blood transfusion service, NACO Ministry of Health and Family Welfare, Govt. of India, New Delhi, 2007.
13. Text book of Pathology – Robbins.
14. Clinical practice of transfusion medicine – Petzswisher.
15. Principle of transfusion medicine – Rossi's.
16. Current medical diagnosis and treatment – Tiverney, Mchpee, Papadakis.
17. Clinical Manual of Clinical pathology and Bio chemistry.
18. Drugs & cosmetics Act, 1940
19. NACO Guidelines.

(सहायक निदेशक)  
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राजकोट