

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN	
PG Diploma in Medical Laboratory Technology CBCS Syllabus 2013	
Document code :	SYLLABUS PGDMT 2013
Revision No:	
Name of Faculty	
Faculty Code	
Programme Code :	PGDMT
Programme Name :	PG Diploma in Medical Laboratory Technology
Effective from:	June 2013

Programme Outline

Introduction: The Post Graduate Diploma in medical laboratory technology is professional programme with opportunities in Various Government & Private Health sector, Pharm Industry, Clinical Research organization.

Eligibility : Graduate in any Life sciences subject and chemistry

Admission : Strictly on merit basis(95% seats reserved for students of H. N. G. University & 05% seats for Universities other than H. N. G. University)

Terms : June to Nov. & Dec. to April (Semester and CBCS System)

Examination Pattern

Sem	Paper Code	Paper Type	Paper Name	Marking scheme				Credit	Total
				External		Internal			
				The	Pra	The	Pra		
1	PGDMT101CC	CC	Introduction to Profession and Hematology	70		30		4	100
1	PGDMT102CC	CC	Introduction to Human body and Clinical Pathology	70		30		4	100
1	PGDMT103CC	CC	Clinical Biochemistry	70		30		4	100
1	PGDMT101PR	PR	Lab I (Practicals based upon 101 to 103 paper)		150			6	150
1	PGDMT101ES	ES	Advances in TB, HIV and Malaria diagnostic	50				2	50
2	PGDMT201CC	CC	Serology and histopathology	70		30		4	100
2	PGDMT202CC	CC	Advance diagnostic techniques	70		30		4	100
2	PGDMT203CC	CC	Clinical Microbiology	70		30		4	100
2	PGDMT201PR	PR	Practicals based upon 201 to 203 paper		150			6	150
2	PGDMT201ES	ES	Clinical Research	50				2	50

Internal exam: Marks for internal assessment only for core theory papers shall be awarded on the basis of attendance/regularity/punctuality, seminars, Poster presentations, viva-voce, field work/library work/academic tour, MCQ's tests, quiz competitions, assignments etc.

Passing Standard: 40 %

Class and Grade: Class and Grade as per the HNGU university common rules and regulation

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN				
Programme code :		PGDMT	Programme Name :	Post graduate Diploma in Medical laboratory technology
Course Code		PGDMT101CC	Semester :	1
Introduction to Profession and Hematology				
Course type :		Core Compulsory	Total Credit :	04
Teaching time (hours)		Examination Marking scheme		
Theory (hrs)	Practical (hrs)	Internal (Marks)	External (Marks)	Total (Marks)
4 X 15 = 60	00	30	70 (Paper of 3 hrs)	100

Unit I

- Introduction to the Profession
- Introduction to medical terminology
- Disciplines in laboratory medicine and application to functions of the body system
- Laboratory Mathematics

Unit II

- Introduction to hematology
- Specimen collection and Laboratory preparation in Hematology
- Routine Hematological tests
- Special Hematological tests

Unit III

- Interpretation of laboratory findings in Hematology
- Introduction to Homeostasis and coagulation
- Laboratory investigation of bleeding disorders
- Principles of Immunohematology and clinical significance of blood transfusion

Unit IV

- Collection and processing of blood for transfusion
- Routine Laboratory process in blood banking
- Transfusion reactions and hemolytic disease of newborn
- Hematological diseases

Reference books

1. Medical Laboratory Technology: Procedure Manual for Routine Diagnostic Tests by Mukherjee, McGraw Hill Education
2. Textbook of medical laboratory technology by Godkar , Bhalani Publishing House
3. Clinical Microbiology Made Ridiculously Simple, GLADWIN,
4. Microbiology an Introduction By Tortora, Benjamin Cummings
5. Medical Microbiology by Kayser
6. Instant Notes in Biochemistry, Hoper
7. Instant Notes in Microbiology,
8. Oxford handbook of clinical and laboratory investigation by Provan
9. District laboratory practice in tropical country by Cheesbrough, Cambridge University Press

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN				
Programme code :		PGDMT	Programme Name :	Post graduate Diploma in Medical laboratory technology
Course Code		PGDMT102CC	Semester :	1
Introduction to Human body and Clinical Pathology				
Course type :		Core Compulsory	Total Credit :	04
Teaching time (hours)		Examination Marking scheme		
Theory (hrs)	Practical (hrs)	Internal (Marks)	External (Marks)	Total (Marks)
4 X 15 = 60	00	30	70 (Paper of 3 hrs)	100

Unit I

- Human Health and Medical care in developing country
- Organization of the clinical laboratory and Role of Medical Laboratory technician
- Introduction to Human body and anatomy
- Introduction to Human physiology

Unit II

- Safety regulation, First aid and clinical laboratory records
- Introduction to laboratory equipment and Basic Laboratory operation
- General comment on specimen collection,
- Units of measurement of Laboratory Findings

Unit III

- Clinical Pathology and urine analysis
- Cerebrospinal fluid (CSF) analysis
- Cavity fluid analysis
- Test of Gastric fluid

Unit IV

- Semen analysis
- Stool examination
- Toxicological Investigation and Therapeutic drug Monitoring
- Case studies

Reference books

1. Medical Laboratory Technology: Procedure Manual for Routine Diagnostic Tests by Mukherjee, McGraw Hill Education
2. Textbook of medical laboratory technology by Godkar , Bhalani Publishing House
3. Clinical Microbiology Made Ridiculously Simple, GLADWIN,
4. Microbiology an Introduction By Tortora, Benjamin Cummings
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Programme code :		PGDMT	Programme Name :	Post graduate Diploma in Medical laboratory technology
Course Code		PGDMT103CC	Semester :	1
Clinical Biochemistry				
Course type :		Core Compulsory	Total Credit :	04
Teaching time (hours)		Examination Marking scheme		
Theory (hrs)	Practical (hrs)	Internal (Marks)	External (Marks)	Total (Marks)
4 X 15 = 60	00	30	70 (Paper of 3 hrs)	100

Unit I

- Introduction to Carbohydrates
- Introduction to Proteins
- Introduction to Lipids
- Introduction to DNA

Unit II

- Introduction to Enzyme
- Introduction to Hormones
- Normal and abnormal Biochemical process of the body
- Specimen processing for Biochemical analysis

Unit III

- Principles of analytical techniques
- Automation in clinical biochemistry laboratory
- Routine biochemical techniques
- Renal profiles

Unit IV

- Liver profiles
- Cardiac profile
- Water and Mineral metabolism
- Acid base balance

Reference books

1. Medical Laboratory Technology: Procedure Manual for Routine Diagnostic Tests by Mukherjee, McGraw Hill Education
2. Textbook of medical laboratory technology by Godkar , Bhalani Publishing House
3. Clinical Microbiology Made Ridiculously Simple, GLADWIN,
4. Microbiology an Introduction By Tortora, Benjamin Cummings
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Programme code :		PGDMT	Programme Name :	Post graduate Diploma in Medical laboratory technology
Course Code		PGDMT101PR	Semester :	1
Lab I				
Course type :		Practical	Total Credit :	06
Teaching time (hours)		Examination Marking scheme		
Theory (hrs)	Practical (hrs)	Internal (Marks)	External (Marks)	Total (Marks)
00	12X15= 180	00	150	150

Practical based upon 101 to 103 papers

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN				
Programme code :		PGDMT	Programme Name :	Post graduate Diploma in Medical laboratory technology
Course Code		PGDMT101ES	Semester :	1
Advances in TB, HIV and Malaria diagnostic				
Course type :		Elective Subject	Total Credit :	02
Teaching time (hours)		Examination Marking scheme		
Theory (hrs)	Practical (hrs)	Internal (Marks)	External (Marks)	Total (Marks)
2 X 15 = 30	00	00	50	50

Unit I

- Recent Advances in TB, diagnostic
- Recent Advances in HIV diagnostic

Unit II

- Recent Advances in Malaria diagnostic
- Current National and International trends in TB, HIV, Malaria treatment

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN				
Programme code :		PGDMT	Programme Name :	Post graduate Diploma in Medical laboratory technology
Course Code		PGDMT201CC	Semester :	2
Serology and histopathology				
Course type :		Core Compulsory	Total Credit :	04
Teaching time (hours)		Examination Marking scheme		
Theory (hrs)	Practical (hrs)	Internal (Marks)	External (Marks)	Total (Marks)
4 X 15 = 60	00	30	70 (Paper of 3 hrs)	100

Unit I

- Introduction to Immunology
- The basic mechanism of innate immunity
- Origin of immune cells
- T cells and B cells

Unit II

- Cytokines
- Functions of immune system
- Cell mediated immune system
- Antibody mediated immune system

Unit III

- Antibody, Immunoglobulin classes
- The complement system
- Major Histocompatibility complex
- Organ transplant

Unit IV

- Hyper sensitivity
- Autoimmune disease
- Serological diagnosis of microbial disease
- Histopathology and cytological technique

Reference books

1. Medical Laboratory Technology: Procedure Manual for Routine Diagnostic Tests by Mukherjee, McGraw Hill Education
2. Textbook of medical laboratory technology by Godkar , Bhalani Publishing House
3. Clinical Microbiology Made Ridiculously Simple, GLADWIN,
4. Microbiology an Introduction By Tortora, Benjamin Cummings
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Programme code :		PGDMT	Programme Name :	Post graduate Diploma in Medical laboratory technology
Course Code		PGDMT202CC	Semester :	2
Advance Diagnostic Techniques				
Course type :		Core Compulsory	Total Credit :	04
Teaching time (hours)		Examination Marking scheme		
Theory (hrs)	Practical (hrs)	Internal (Marks)	External (Marks)	Total (Marks)
4 X 15 = 60	00	30	70 (Paper of 3 hrs)	100

Unit I

- Colorimetry and photometry
- Automated hematological cell counter
- Molecular Biology, Molecular Pathology and related laboratory technique
- ELISA and ELISA reader

Unit II

- Measurement of electrolytes
- Automated Biochemistry analyzer
- Dry Chemistry analyzer
- Clinical importance and Diagnostic technique for hormones

Unit III

- Advance techniques in Microscopy
- Automation in Bacteriology
- Electrophoresis technique for diagnostic
- Chromatography for diagnostic application

Unit IV

- Advance techniques in Immunodiagnostic
- Clinical importance and Diagnostic technique for Vitamins
- Cancer and tumor markers
- Cytogenetics

Reference books

1. Medical Laboratory Technology: Procedure Manual for Routine Diagnostic Tests by Mukherjee, McGraw Hill Education
2. Textbook of medical laboratory technology by Godkar , Bhalani Publishing House
3. Clinical Microbiology Made Ridiculously Simple, GLADWIN,
4. Microbiology an Introduction By Tortora, Benjamin Cummings
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Programme code :		PGDMT	Programme Name :	Post graduate Diploma in Medical laboratory technology
Course Code		PGDMT203CC	Semester :	2
Clinical Microbiology				
Course type :		Core Compulsory	Total Credit :	04
Teaching time (hours)		Examination Marking scheme		
Theory (hrs)	Practical (hrs)	Internal (Marks)	External (Marks)	Total (Marks)
4 X 15 = 60	00	30	70 (Paper of 3 hrs)	100

Unit I

- Introduction to clinical Microbiology
- Clinical Bacteriology
- Staining Methods and aseptic technique

Unit II

- Culturing of Microorganisms
- Identification of bacteria
- Study of Gram Negative Bacteria
- Study of Gram Positive Bacteria

Unit III

- Clinical Mycology
- Pathogenic Protozoan
- Collection transport and examination of specimen
- Clinical virology

Unit IV

- Antibiotics
- Multidrug Resistance
- Biosafety in microbiology lab

Reference book

1. Medical Laboratory Technology: Procedure Manual for Routine Diagnostic Tests by Mukherjee, McGraw Hill Education
2. Textbook of medical laboratory technology by Godkar , Bhalani Publishing House
3. Clinical Microbiology Made Ridiculously Simple, GLADWIN,
4. Microbiology an Introduction By Tortora, Benjamin Cummings
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Programme code :		PGDMT	Programme Name :	Post graduate Diploma in Medical laboratory technology
Course Code		PGDMT201PR	Semester :	2
Lab II				
Course type :		Practical	Total Credit :	06
Teaching time (hours)		Examination Marking scheme		
Theory (hrs)	Practical (hrs)	Internal (Marks)	External (Marks)	Total (Marks)
00	12X15= 180	00	150	150

Practical based upon 101 to 103 papers

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN				
Programme code :		PGDMT	Programme Name :	Post graduate Diploma in Medical laboratory technology
Course Code		PGDMT201ES	Semester :	2
Clinical Research				
Course type :		Elective Subject	Total Credit :	02
Teaching time (hours)		Examination Marking scheme		
Theory (hrs)	Practical (hrs)	Internal (Marks)	External (Marks)	Total (Marks)
2 X 15 = 30	00	00	50	50

Unit I

- Overview of drug development process
- Overview of pre-clinical trial
- Overview of Clinical Trials

Unit II

- Quality Control and quality assurance in clinical laboratory
- Good laboratory practice
- NABL accreditation process

Reference

1. ICH GCP guidelines
2. Basic principle of Clinical research and methodology, Gupta, Institute of clinical Research, India
3. Quality Assurance in Bacteriology and Immunology, Sudarshan Kumari and Rajesh Bhatia, WHO 2003
4. Quality assurance in Microbiology Rajesh Bhatia, Rattanlal, CBS publisher
5. Quality Control For Dummies, Larry Webber and Michael Wallace Wiley Publishing, Inc.