CURRICULUM

MD (LABORATORY MEDICINE)

(Residency Program)

Faculty of Basic Science and Para Clinical Sciences
Bangabandhu Sheikh Mujib Medical University
Shahbag, Dhaka-1000

Department of Laboratory Medicine
5TH Floor, OPD-Building-2
Website: cpdbsmmu.org

Contents:

MD (Laboratory Medicine)

1. Introduction

Bangabandhu Sheikh Mujib Medical University (BSMMU) is the premier Postgraduate Medical Institution of the country. It bears the heritage to Institute of Postgraduate Medical Research (IPGMR) which was established in December 1965. In the year 1998 the Government converted IPGMR into a Medical University for expanding the facilities for higher medical education and research in the country. It has an enviable reputation for providing high quality postgraduate education in different specialties. The faculty of Basic Science and Para Clinical Science is one of the faculties of the university. Postgraduate courses offered by the Department of Laboratory Medicine (Clinical Pathology Department) are under the Faculty of Basic Science and Para Clinical Science. Bangladesh Medical and Dental Council recognize the degrees granted/offered by the University. Department of clinical Pathology has been changed to Department of Laboratory Medicine since July 2016.

2. Purpose

The purpose of the MD course in laboratory medicine is to provide the resident with sufficient training and experience in the methods, applications, and interpretation of clinical laboratory investigations. It will also provide sufficient knowledge about the organization and administration of the clinical laboratory to allow effective function as a Lab Medicine Specialist, laboratory director and to develop skilled manpower for conducting quality Medical education in Bangladesh and abroad.

The department of Laboratory Medicine (Clinical Pathology) is present in the medical colleges hospitals and Bangabandhu Sheikh Mujib Medical University (BSMMU). In the district hospitals department of Laboratory Medicine is the only set up for laboratory diagnosis. However, there is no adequate program to produce specialists in laboratory Medicine in Bangladesh. In this filed in Bangladesh only two courses are present as Diploma in Laboratory Medicine (DLM) course in different medical colleges and BSMMU and MCPS is run by the Bangladesh College of Physicians and Surgeons (BCPS).

Department of Laboratory Medicine (Clinical Pathology) BSMMU started 2 years course M. Phil in Clinical Pathology in 2006. Every year new modern technology is introducing in this field to diagnose the diseases. Previously this modern technology was used only in research purposes. In developed and developing countries like AIMS in India they have three years course named as MD in Laboratory Medicine. With the above circumstance BSMMU has upgraded M. Phil from MD (Laboratory Medicine) Course March 2014.

The Department of Laboratory Medicine in different health care set up do not have proper trained manpower to give specialist services. These departments also act as a training center for medical students, trainee doctors and medical technologists. To carry out these activities there is increase need for teachers and consultants Department of Laboratory Medicine (Clinical Pathology) in the medical college hospital ls and district hospitals. It may be mentioned here that Government has created 40 (forty) post of consultants in different district hospitals. Due to shortage of specialist in clinical pathology only a few posts have been filled up so far.

3. Program objectives

A student upon qualifying MD (Laboratory Medicine) will be able to

* Be a competent Laboratory Medicine Specialist.
* Become knowledgeable in result interpretation and will assist the laboratory director in problem solving, quality control (QC) and quality assessment (QA), laboratory management and clinical interactions.
* Provide teaching and training to the students at the undergraduate and postgraduate medical education
* Interact with allied departments by rendering services in advanced laboratory techniques.
* Acquire skills in conducting collaborative research in the field of Laboratory Medicine and allied sciences.

4. General Information

A. Name of the Course : MD (Laboratory Medicine).
B. Entry Qualification: The candidate must have an MBBS or an equivalent degree from an university recognized by Bangladesh Medical and dental Council (BMDC) and completed one year internship.
C. Duration : 03 years
D. Method of selection: Selection will absolutely on the basis of merit of the entry test result.
E. Number of seats: Will be determined by faculty/University
F. Foreign candidates: The eligible applicant will require appearing before an interview board for final selection.
G. Date of joining: March every year.
H. Medical examination: The selection of each student will be subject to medical fitness.

5. Program Description

i. General Instructions

The training of the MD course is full time and residential. Private practice or any type of job of any kind is strictly prohibited during the course period. Each student shall be considered as resident and honorarium for the private students will be given as per rule of the university. If any resident violates this rule his/her studentship will be terminated.

ii. Duties and Responsibilities

Duties and responsibilities of students shall be fixed by a course supervisory committee of the Department of Laboratory Medicine (Clinical Pathology).

iii. Leave

During the course resident student will follow the rules regarding leave approval and forwarding as issued by the authority of BSMMU administration.

iv. Teaching Learning Techniques

1. Theoretical lectures
2. Small group demonstration
3. Practical sessions
4. Laboratory attachment
5. Seminar, journal club meeting, case presentation
6. Self learning exercise, assignment
7. Research & thesis writing

v. Monitoring Tools

1. Periodical assessment consisting of written, oral and practical examinations.
2. Log book maintenance.

vi. Evaluation

1. **Formative Assessment**: Residents will be assessed on several items specific for individual contents on the basis of knowledge, skill and attitude.

2. **Summative assessment**: At the end of Year I and Year II of Phase A there will be summative assessment covering all the specific contents of phase-A. After successful completion of particular phase-A students will be promoted to the next phase.

vii. Examinations:

1. After completion of each module, written, oral and practical assessment examination will be held in the department.
2. On successful completion of all modules, assessment examinations the student will eligible for appearing in the part-I final examination consisting with written, oral & practical.
3. On completion of Phase A examinations (all modules must be completed successfully), a candidate will have to enroll in final phase (Phase-B)

viii. Conditions to appearing the examinations:

1. Successful completion of every module in any phase is the important condition to appear in Part and Phase final examinations.
2. At least 75 percent attendance in lecture, tutorial and practical classes are required for appearing any examination.
3. Successful completion of all assignment is necessary to appear in examinations.
4. Regular 75 % attendance in departmental seminar and slide sessions are mandatory to appearing in examinations.
5. Obtaining the qualifying marks in assessment examinations is one of the important pre-requisite to appear in final examination.

6. Course outline

Organization of the course:

Whole course is divided in to two phases (Phase-A & Phase-B): Two year Phase-A & One year Phase-B . The resident will complete the individual items mentioned in the log book by the given time and eligible for appearing the module final assessment examinations. On successful completion of all modules of year one, the resident will be promoted to the year two. After passing Phase-A examinations every resident will conduct an approved research work for one year in Phase-B. Before appearing the final examination his/her thesis should be approved at the faculty meeting in the department and an article based on his/her research project should be submitted in a University recognized journal.

7. Course Contents: (Outline)

Clinical Pathology, General Pathology and Basic Laboratory Technique, Clinical hematology and Transfusion Medicine, Clinical Biochemistry, Clinical Microbiology & Clinical Laboratory Management and Molecular diagnostic,

8. Overview of the Course

Name of the course: MD (Laboratory Medicine)
Duration of the course: 3 years
Comprises (Phase - A & Phase –B)
Commencement of the course: 1st March of each year

Course Content

Phase-A -Two Years (Year-One, Year-Two)
Phase-B –One Year

Course Content

Phase-A (Year -1)
Paper-I (Clinical Pathology)
Paper-II (General Pathology and Basic Laboratory Technique)
Paper-III (Clinical hematology and Transfusion Medicine)

Phase-A (Year -2)
Paper-IV (Clinical Laboratory Management and Molecular diagnostic)
Paper-V (Clinical Biochemistry)
Paper-VI (Clinical Microbiology)

Medical Education, Biostatistics & Research Methodology
Only formative examination and assessment & this part will not be included in any paper.

Phase-B (One year)
Thesis & Thesis defense
Comprehensive examination
N. B: Practical training along with practical classes will be incorporated in the log book in every part of the course.

9. Course Content (Details)

Paper- I (Clinical Pathology): Distribution of marks:

Distribution of marks:

Written

Total written marks = 100

Pass marks = 60

Oral

Total oral marks = 100

Pass marks = 60

Practical + OSPE

Total marks = 100 (80 + 20)

Pass marks = 60

Knowledge:

01	Different type of Microscope- Use and care of microscope
02	Sample collection, processing, preservation & transport
03	Routine examination of urine
04	Special tests of urine
05	Routine examination of stool
06	Special tests of stool
07	CSF- Examination and interpretation
08	Body fluids (Pleural, Ascitic, Synovial and others)- Examination and interpretation
09	Common Staining (Leishman, Giemsa, Gram, ZN, Alberts, Field's staining)
10	Antigen-Antibody reactions, Class-I
11	Antigen-Antibody reactions , Class-II
12	Andrology & Fertility assessment-semen analysis & interpretation
13	Tumour markers-Technique, example & interpretation
14	Protozoa- Classification, mode of infection and laboratory diagnosis 1
15	Protozoa- Classification, mode of infection and laboratory diagnosis -II
16	Protozoa- Classification, mode of infection and laboratory diagnosis -III
17	Helminthology- Classification, life cycle and laboratory diagnosis -I
18	Helminthology- Classification, life cycle and laboratory diagnosis -II
19	Helminthology- Classification, life cycle and laboratory diagnosis -III
20	Recent advances in clinical Pathology

Skill

01	Common Haematological techniques like- Hb, TC, DC, ESR, BT, CT & HCT/PCV
02	Examination of T/S, P/S, U/S, HVS and Liver abscess
03	Microscopic Examination of Sputum, Skin Scraping, Skin slit smear for Hansen's bacilli

04	VDRL, ASO, Widal, RA Procedure and interpretation
05	Examination of CSF, Pleural, Ascitic fluid, synovial fluid
06	Bright field, dark field, polarizing, phase contrast
07	Routine and special test of urine
08	Routine and special test of stool
09	Sample collection of clinical pathology and processing preparation of staining as their interpretation
10	Microscopic examination of sputum
11	Methods of tumour marker estimation

Paper- II (General Pathology & Basic Laboratory techniques):

Distribution of marks:

Written

Total written marks = 100

Pass marks = 60

Oral

Total oral marks = 100

Pass marks = 60

Practical + OSPE

Total marks = 100 (80 + 20)

Pass marks = 60

Knowledge:

01	Cell injury (Reversible and irreversible)
02	Cellular Adaptation
03	Acute inflammation
04	Chronic inflammation
05	Tissue Repair: Cellular growth, fibrosis-I
06	Tissue Repair: Cellular growth, fibrosis-II
07	Haemodynamic disorder (Edema, hyperemia, Congestion, hemorrhagic , hemostasis and thrombosis)
08	Haemodynamic disorders (Embolism, infarction, shock)
09	Disease of immune systems (Basic)- I
10	Disease of immune systems (Basic) -II
11	Disease of immune systems (Basic) –III
12	Neoplasia - I
13	Neoplasia - II
14	Infectious diseases - I
15	Infectious diseases (tuberculosis) II

16	Organization & Management of Lab services with safety
17	Genetic disorder - I
18	Genetic disorder - II
19	Hypersensitivity reaction
20	Autoimmune diseases
21	Transplant immunology
22	Host parasite interaction

Skill

01	Fixative, staining of tissue & cytopathology
02	Cytopathology- type, transport, processing, preparation & staining.
03	Histopathology- tissue transport, processing, H& E staining.
04	Special staining for histopathology & cytopathology.
05	Paps smear
06	FNAC
07	Immunohistochemistry (Basic)
08	Frozen Section

Paper-III (Clinical Hematology & Transfusion Medicine)

Distribution of Marks:

Written

Total written marks = 100

Pass marks = 60

Oral

Total oral marks = 100

Pass marks = 60

Practical + OSPE

Total marks = 100 (80 + 20)

Pass marks = 60

Knowledge

01	Stem cells and haemopoisis- Erythropoiesis, Granulopoiesis, Lymphopoiesis, Thrombopoeisis and their regulation
02	Bone marrow- **,** Normal bone marrow structure, Bone marrow aspiration and failed aspiration, Bone marrow biopsy and trephine biopsy
03	Define and classification of anaemia **-** Iron deficiency anaemia,
04	Normochromic normocytic anaemia and Sideroblastic anaemia
05	Megaloblastic anaemia
06	Intracorpuscular haemolytic anaemia

07	Extracorpuscular haemolytic anaemia
08	Acute Leukaemia and its diagnosis- Acute myloblastic leukaemia (AML) and its diagnosis.
09	Adult Acute Lymphoblastic leukaemia and its diagnosis
10	Chronic Leukaemia and its diagnosis – CML, CLL
11	Myelo-proliferative disorder and Myelo-dysplastic syndrome (MDS)
12	Myeloma and other paraproteiaemias
13	Bleeding disorders ant its diagnosis
14	Platelets disorder 1. Acquired. 2. Congenital
15	Modern techniques in haematology
15	**Blood Transfusion**
16	Antigen in human blood (Blood group, cross matching and screening
17	Clinical blood transfusion- Safe blood transfusion The blood donor Blood component and blood products. Anticoagulants, transfer & storage.
18	Complication of blood transfusion and Haemolytic diseases of newborn. Massive blood transfution.
19	Quality assurance and Recent advances in transfusion medicine
20	Quality assurance and Quality Control in haematology lab.

Skill

01	Collection, Transport and processing blood sample for different haematological examination
02	Performance of Hb estimation TC, DC, ESR, BT,CT, PCV, PT & APTT
03	Quality assurance and Quality Control in haematology lab
04	Serum Iron , B12, Folic Acid estimation
05	Osmotic fragility test, flow cytometry, sicklingtest, coomb's test , Hb electrophoresis
06	Aspiration of bone marrow and preparation of bone smear and interpretation
07	ABO and Rh grouping
08	Preparation of blood components fresh frozen plasma , platelet concentrate, cryoprecipitate
09	Coomb's test

Paper-IV (Clinical Laboratory Management & Molecular diagnostic)

Distribution of marks:

Written
Total written marks = 100
Pass marks = 60
Oral
Total oral marks = 100
Pass marks = 60
Practical + OSPE
Total marks = 100 (80 + 20)
Pass marks = 60

Sill

01	Organization of the laboratory and management
02	Total quality management, Quality assurance and Quality control
	Lab Accessories
03	Different kinds of refrigerators , Incubators
04	Ovens, Water-baths, Auto-dispensers
05	Distillation plant, Deioniser plant, RO System, Auto pipettes, pH Meter,
06	Analytical and precision Balance
	Essential equipment
07	Centrifuge machines, Photoelectric Colorimeter
08	Spectrophotometer
	Modern Equipment
9	Fully Automated Haematology Auto Analyzer
10	ELISA Reader, Autoanalyzers, Flame-photometer
11	Blood Gas Analyser
12	Nephelometry, Chemiluminense
13	Scanning and Transmission Electron microscopy
14	Electrophoresis apparatus, Densitometer
	Special staining
15	Immunofluroscene & immunohistochemistry.
	Molecular Technique
16	Concept of PCR/molecular laboratory
17	PCR machines - all kinds
18	Principle of PCR, Micro Array

19	HLA typing , DNA profiling
20	Cell culture Hybridization
21	Recombinant DNA technology
22	Flow cytometry
23	Atomic absorption spectrophotometer
24	High performances liquid chromatography (HPLC)
25	Microscope-Light, Fluorescent, dark ground, phase contrast
26	Bio-safety hood

Paper-V (Clinical biochemistry)

Distribution of Marks:
Written
Total written marks = 100
Pass marks = 60
Oral
Total oral marks = 100
Pass marks = 60
Practical + OSPE
Total marks = 100 (80 + 20)
Pass marks = 60

Knowledge

01	Basic Chemistry
02	Mol Wt, Atomic Wt. Eq. wt. Log table & Periodic table.
03	Water purification/ grading of water, Osmolarity, Normality, Specific gravity etc
04	Colloid, Crystalloid
05	Disorders of carbohydrate; Diabetes Mellitus,
06	Metabolic disorder of protein
07	Lipids metabolic disorders of lipid
08	Enzymology: diagnostic values of enzymes & isozymes in health and disease
09	Acid-base and Electrolyte imbalance and regulation
10	Vitamins & Trace elements and other important metals
11	Hormones: chemistry, metabolism, physiology and pathology
12	Gastric function tests, Pancreatic function tests, Intestinal function tests ,
13	Malabsorption syndrome, Placental function tests
14	Liver function tests Kidney function tests
15	Endocrine function tests.
16	Thyroid function tests

17	Quality Assurance & QC in clinical biochemistry
18	Techniques in Colorimetry, spectrophotometry, Electrophoresis, chromatography & HPLC
19	Cardiac enzymes
20	Lab Hazards and safety in clinical chemistry
21	Lab automation in clinical chemistry

Skill

01	Manual method of estimation of glucose, billirubin, urea, cholesterol
02	Automated method of estimation of a. Above B. SGPT, SGOT, LDH, CPK, Calcium, Phosphate
03	Measurement of blood PH ad Arterial blood gas analysis
04	Electrolytes estimation
05	Methods of estimation vitamins and trace elements
06	Methods of hormone assy- ELISA RIA

Paper-VI (Clinical Microbiology)

Distribution of marks:

Written

Total written marks = 100

Pass marks = 60

Oral

Total oral marks = 100

Pass marks = 60

Practical + OSPE

Total marks = 100 (80 + 20)

Pass marks = 60

	Bacteriology
01	**Smear & Stains** Smear: Definition, Characteristics, Types, Utility Types of staining, Principles of different staining, Role of staining in microbiology, Application of staining.
02	Sterilization- (Basic)
03	Nosocomial infection, Infection control program, Hospital waste management
04	Media preparation, preservation and culture techniques
05	Antimicrobial agents and drug resistance
06	Laboratory safety and bio-safety cabinet
07	Blood culture
08	Gram positive cocci, Gram positive Rod (Co.dip)
09	Gram-negative Rods, salmonella, e coli, kleb, enterobactor, pseudomonas acinobactor, proteus
10	Mycobacterium
	General Virology
11	Introduction of Virology: Nomenclature, definition, classification & general

	characteristics
12	Viral pathogenesis, Viral growth & replication, Antiviral agents
13	Immunity in viral infections, Control of viral diseases: Prevention – viral vaccines, Bacteriophages
14	Laboratory diagnosis of viral diseases, Tissue culture and other laboratory Techniques, Serological method in virology
	Mycology:
16	Basic mycology: Definitions, classification, structure, Pathogenesis, Superficial, Cutaneous & Subcutaneous Mycoses
17	Systemic mycoses-Histoplasma
18	Laboratory diagnosis of fungal diseases
	Laboratory techniques: (Practical)
19	Collection technique, transport, processing and preservation of clinical specimens for microbiological tests.
20	Preparation & uses of the following culture media:- Nutrient agar, Blood agar, Chocolate agar, MacConkey's agar, S.S. agar, Potassium Tellurite agar, Muller Hinton agar, Lowenstein Jensen, SDA media
21	Handling of Blood,Throat swab, Stool, Urine, wound swab, rectal swab, Sputum, Body fluids for bacteriology examination.
22	Serological test for diagnosis of microbiological diseases.
23	Antimicrobial sensitivity testing.

Skill

01	India ink preparation and its interpretation
02	Fungal slide preparation and examination
03	P/S examination
04	Fungus M/F (Stain)
05	ICT filaira
06	ICT leptospira
07	Toxoplasma IgG avidity test
08	Anti TB IgG/IgM/IgA/ H. Pylory IgG
09	**Molecular microbiology**
10	Gene x pert (Sputum) tuberculosis
11	Gene x pert MTD
12	PCR
13	MTB-NIM
14	MTB-MDR
15	MTB-PVC X DR
16	MTB-XDR
17	Tuberculin skin test
18	Slit skin preparation
19	Preparation of stain and its interpretation
20	Serological test – ASO, RA, TPHA, Widal, VDRL

Phase- B (Thesis Part) – One Year

Thesis & thesis defense
Comprehensive viva

10. Examination format: (Assessment)

Assessment formats

Assessment is the process of forming a judgment about the quality and extent of student achievement or performance, and therefore, by inference, a judgment about the learning itself. Assessment inevitably shapes the learning that occurs; that is, what students learn and how they learn should reflect closely the purposes and aims of the course.

Residency assessment examination will be two types : Formative and Summative.

Formative evaluation

Formative assessments include Assessment at work place situations, Assessment at rotational placements, End-of-Block or End-of-Module Exams and within-Block or within-Module assessments (Seminar/journal club presentations, Other presentations, Written, Practical or Clinical assignments etc. End of Block Exams will be Formative.

Formative Exams/Assessment marks distribution for all paper

Assessment	Total Marks	Pass Marks	Time
A. Written exam Objective question SAQ	100	60	180 minutes
B. Oral exams	100	60	-
C. Practical & OSPE	100	60	-
D. Grades and marks from within – Block or within – module assessment (Log- book result)	Complete : 80-100% of the task were completed satisfactorily Recoverable : 60-79% Complete satisfactorily Irrecoverable : < 60% completed satisfactory		

Summative Exam marks distribution for all Paper

Assessment	**Total Marks**	**Pass Marks**	**Time**
A. Written exam SAQ Short Essay questions (and others)	100	60	180 minutes
B. Oral exams	100	60	-
C. Practical & OSPE	100	60	-
From Summative Exams 70**%** and Formative Assessment 30% add to Total P**aper Marks**			

Phase B

In addition to doing research residents have to do the routine works in the department, attending seminars, journal club etc.

Topic	**Total Marks**	**Pass marks**
Thesis & Thesis defense	200	120
Practical & Comprehensive viva	100	60

1. the results of the thesis presentation and defense will be consolidated as follows
    i) Accepted
    ii) Accepted with correction
    iii) Not Accepted
2. In case a candidate is unable to satisfy the examination board members even though the thesis is adjudged adequate, the board may recommend to the Academic council

that the candidate may be permitted to appear at another oral examination after a lapse of 6 months from the first oral examination.

3. If a thesis is judged inadequate for the award of the M Phil degree, the examiners may permit the candidate to do more research work in order to improve the standard of the thesis and may recommend the Academic council that the candidate may be allowed to appear at a new examination after improvement of his/her thesis.

11. Job responsibilities for the residents:

a) Attend all theoretical and practical classes.
b) Attend morning and evening multi-head microscopy session.
c) Assist in teaching specially practical classes.
d) Able to teach Laboratory Medicine to undergraduates, postgraduates, nurses and paramedical staff including laboratory personnel.
e) Able to collect specimen such as venipuncture, finger-prick, and bone-marrow aspiration.
f) Should be familiar with the operation, function and routine maintenance of equipment.
g) Supervise and train technical staff of the laboratory
h) Develop and establish newer techniques belonging to all subspecialties of laboratory medicine.
i) Take safety measures in performing tests.
j) Design and implement research plans in the field of laboratory medicine.
k) Perform the tests belonging to clinical pathology department such as.
    i. Routine microscopy – Urine, Stool, body fluid, diagnosis of parasitic diseases.
    ii. Special test – Phase contrast, Polarizing, Z. N. Stain, Gram Stain, Semen analysis, Faecal fat, Chyleuria, HVS, Bence- jonces protein, Sputum, OBT.
    iii. Routine haematology, blood coagulation profile, bone marrow analysis, fertility testing, tumour markers, iron status and others tests.

12. Rotational posting/ Placement of others department

Sl	Department/BSMMU	Duration	Sl	Department/Institute	Duration
1	Pathology	2 weeks	**9**	ICU & HDU	1 week
2	Haematology	2 weeks	**10**	CCU	1 week
3	Paed haematology	4 weeks	**11**	Neonatal ICU	1 week
4	Transfusion Medicine	2 weeks	**12**	Internal Medicine	1 week
5	Biochemistry	4 weeks	**13**	AFIP	2 weeks
6	Microbiology	6 weeks	**14**	ICDDRB	1 week
7	Virology	6 weeks	**15**	INM	1 week
8	Paediatric	1 week	**16**	Bone marrow unit-DMCH	1 week

13. Guidelines for residents:

- Each resident will maintain logbook from the date of joining in the course to keep records of his/her performance regularly and daily work should be signed-up by respective supervisors.
- The logbook will be supplied by the department of clinical pathology, BSMMU.
- Resident will submit Logbook before their final examination i.e. at the end of the course.
- Head of the department will check Logbook once in a month.
- Resident will carry Logbook when they are placed outside of their parent department to complete the portion carried out there and the specific portion would be regularly signed by the supervisor of the respective department.

1. Bottom of Form

14. Code of Student Rights, Responsibilities, and Conduct

Student Responsibilities

Academic misconduct is defined as any activity that tends to undermine the academic integrity of the institution. The university may discipline a student for academic misconduct. Academic misconduct may involve human, hard-copy, or electronic resources.

Policies of academic misconduct apply to all course, department and university-related activities, including field trips, conferences, performances and exams outside of a specific course structure (such as take-home exams, entrance exams, or auditions and theses exams) and research work outside of a specific course structure (such as lab experiments, data collection, service learning, and collaborative research projects). The faculty member may take into account the seriousness of the violation in assessing a penalty for acts of academic misconduct. The faculty member must report all cases of academic misconduct to the appropriate official. Academic misconduct includes, but is not limited to, the following:

1. Cheating

   Cheating is considered to be an attempt to use or provide unauthorized assistance, materials, information, or study aids in any form and in any academic exercise or environment.

   a. A resident must not use external assistance on any “in-class”, “take-home” or in hall examination, unless the involved faculty member specifically has authorized external assistance. This prohibition includes, but is not limited to, the use of tutors, books, notes, calculators, computers, and wireless communication devices.
   b. A resident must not collaborate with other persons on a particular project and submit a copy of a written report that is represented explicitly or implicitly as the student’s individual work.

c. A resident must not use any unauthorized assistance in a laboratory, at a computer terminal, or on fieldwork.
d. A resident must not submit substantial portions of the same academic work for credit or honors more than once without permission of the instructor or program to whom he work is being submitted.
e. A resident must not, without authorization, alter a grade or score in any way, nor alter answers on a returned exam or assignment for credit.

2. Fabrication

A resident must not falsify or invent any information or data in an academic exercise including, but not limited to, records or reports, laboratory results, and citation to the sources of information.

3. Plagiarism

Plagiarism is defined as presenting someone else's work, including the work of other students, as one's own. Any ideas or materials taken from another source for either written or oral use must be fully acknowledged, unless the information is common knowledge. What is considered "common knowledge" may differ from course to course.

a. A resident must not adopt or reproduce ideas, opinions, theories, formulas, graphics, or pictures of another person without acknowledgment.
b. A resident must give credit to the originality of others and acknowledge indebtedness whenever:

    1. directly quoting another person's actual words, whether oral or written;
    2. using another person's ideas, opinions, or theories;
    3. paraphrasing the words, ideas, opinions, or theories of others, whether oral or written;
    4. borrowing facts, statistics, or illustrative material; or
    5. offering materials assembled or collected by others in the form of projects or collections without acknowledgment

4. Interference

A resident must not steal, change, destroy, or impede another student's work, nor should the student unjustly attempt, through a bribe, a promise of favors or threats, to affect any resident grade or the evaluation of academic performance. Impeding another resident work includes, but is not limited to, the theft, defacement, or mutilation of resources so as to deprive others of the information they contain.

5. Violation of Course Rules

A resident must not violate course rules established by a department, the course syllabus, verbal or written instructions, or the course materials that are rationally related to the content of the course or to the enhancement of the learning process in the course.

6. Facilitating Academic Dishonesty

A resident must not intentionally or knowingly help or attempt to help another student to commit an act of academic misconduct, nor allow another student to use his or her work or resources to commit an act of misconduct.

15. Charter of Responsibility of Supervisors, Course Co-ordinators and Course Directors

A. Supervisor:
Eligibility: Assistant Professor and above.

Responsibility:

- ü maintain attendance and discipline of the Residents.
- ü provide orientation, guidance and feedback to resident's learning.
- ü day to day signing of performance record (log book).
- ü authorized to sign casual leave of the resident and forward it to the chairman.
- ü be responsible for completing the following block program-
    - a) Clinical performance
    - b) Academic performance
    - c) Global competence
    - d) Organizing end of block assessment
    - e) Leave report
- ü Assess residents competence outcomes.
- ü Send end of Block Report to the Course Coordinator.

B. Course Coordinator:
Eligibility: Associate Professor and above.

Responsibility:
ü be responsible for planning, organizing and providing management support to training and academic activities of the Residents in the Department.
ü supervise, guide and lead the team of Supervisors.
ü circulate the Training Rotation Schedule to the Supervisors for implementation
ü assist the Course Director in planning, oranizing and managing the entire course
ü maintain inter-departmental communications regarding training, end of block report and circulation of the reports.
ü compile end of block report (EOBR) and prepare the Phase Completion Report (PCR).
ü will compile & maintain leave records and take necessary actions as per university rules in consultation with the chairman.
ü report to the Course Director.

C. Course Director:
Eligibility: Any Professor of the respective faculty.

Responsibility:
ü supervise, guide and lead team of Course Coordinators.

ü appoint Course Coordinators as per recommendations of the respective chairman of the Departments.
ü prepare the Training Rotation Schedule (rota) and circulate it to the Course Coordinators/ Chairman.
ü collect and endorse Phase Completion Report.
ü certify qualifications eligibility for appearing in the phase final examinations.
ü will prepare training rotation schedule for Residents with incomplete or defolters, in consultation with respective Chairman.
ü manage dsputes and conflicts in consultation with the Dean and refer appropriate cases to the appropriate authority through the Dean.
ü submit Phase Completion Report to the Dean for onward presentation in the Academic Council.
ü report to the Dean.

16. BOOKS RECOMMENDED

1. Robbins Pathologic Basics of Disease.
2. Henry's Clinical Diagnosis & Management by Laboratory Methods
3. Degruchy's Clinical Haematology in Medical Practice
4. Dacie, Practical Haematology
5. Medical Microbiology, Jawets
6. Medical Microbiology, Greenwood efal.
7. Medical Laboratory Technology, Ramnuk,Sood
8. Modern Medical Microbiology, M. R. Chowdhury
9. Practical Pathology & Microbiology, K.A. Khaleque
10. Essential Immunology, Ivan Roitt
11. Parasitology, K. D. Chaterjee,
12. Lippincott's Illustrated Reviews Biochemistry
13. Harper's Bio-chemistry
14. Walter & Israel General Pathology
15. Manual For Training of Laboratory Technician in Bangladesh, Clinical Pathology Department BSMMU & WHO-2006.
16. Postgraduate Haematology, Av Hoffbrand and S M Leuis
17. Colour atlas of Clinical Haematology, A Victor Hoffbrand, John E Pettit.
18. VARI EY H Practical Clinical Bio- chemistry, Butterworth, London
19. Wintrobes Haematology

(N.B: All book latest edition)