

Curriculum for Diploma in Medical Technology of Sanitary Inspectorship

State Medical Faculty of Bangladesh

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August 2021

**Curriculum for Diploma in Medical Technology of Sanitary
Inspectorship course**

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Supported by-

World Health Organization (WHO), Bangladesh

Preface

With increasing public expectations about the health care services, specially in the emergency & pandemic situation like COVID 19 the quality of care itself is under scrutiny all over the world. Therefore a positive change is needed in the role of Medical Technologists. The role of teachers and students in teaching and learning to bring a positive changes in allied health professionals education also needs to be reviewed and further developed to make it more competency based.

This revised Health Technology (HT) competency based curriculum has been developed and scientifically designed, making it responsive to the needs of the learners and focussed towards the need of consumers and country. The present HT curriculum with its assessment methods is expected to effectively judge competencies acquired with those which are required to cater the health needs of our people. It is gratifying to note that all concerned in the promotion of allied health science in the country have involved themselves in the planning and formulation of this competency based & community oriented need-based curriculum.

Contents like basic computer science, communicative English, Ethics, communication skills, behavioural science, primary health care, environment and sanitation have been given the required emphasis in this document. Though the curriculum is not the sole determinants of the outcome, yet then it is very important as it guides the faculty members in preparing their instruction, tells the students where to go, what to do and what knowledge, skills and attitude they are expected to develop.

In conclusion, I would like to state that, the curriculum planning process should be continuous, dynamic and never-ending. If it is to serve best, the needs of the individual students, educational institutions and the expectations of people community to whom we are ultimately accountable, are required to be evaluated and given due attention.

I congratulate all who were involved in designing and developing the competency based curriculum, particularly the Director, CME, ADGs & Directors of DGME, Secretary, SMFB, members of the working group and the faculty members of Centre for Medical Education (CME). My special thanks to WR, WHO Bangladesh, Team Leader (Health System) & NPO (HRH) WHO Bangladesh for financial & technical support.

Professor Dr A.H. M. Enayet Hussain
Director General
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Foreword

Curriculum planning and designing is not a static process, rather a continuous process done regularly through a system. This curriculum was developed a few years back in 2008 but it was needed to be updated to make it more technology oriented students centred and competency based.

Initially there were policy level meetings and meeting of the Curriculum Working Group of different disciplines/courses from Institute of Health Technologies (IHT) to prepare a draft curriculum. Subsequently, in order to develop a consensus, decision was taken to hold Review Workshops through active participation of different groups of faculty members. A taskforce group examined the revised curriculum for the different courses of IHT to give it a final shape with the financial & technical support by WR, WHO Bangladesh & NPO (HRH) WHO Bangladesh.

The revised Curriculum for Health Technology (HT) is expected to be implemented for the newly admitted students of the next session. The success of this curriculum, which is made more competence based and need-based, depends on its proper implementation with active leadership of the MOH&FW, DGME, SMFB, principals & teachers of IHT with interactive participation of students.

It is expected that this curriculum will serve as present day guideline for the students of IHT and its faculty members. In order to ensure further improvement, this curriculum needs constant review and revision with time to time updating.

My sincere thanks to Prof Dr A.H. M. Enayet Hussain, Director General, DGME, for his guidance & supervision with his team of DGME. My special thanks to Dr. Bardan Jung Rana, WR, WHO Bangladesh, Dr Sangay Wangmo, Team leader (Health System) & Mr Md Nuruzzaman, NPO (HRH), WHO Bangladesh country office for financial & technical support for this activity. I like to thank Professor Dr. Md. Humayun Kabir Talukder, Professor (Curriculum Development & Evaluation), Centre for Medical Education (CME), working co-ordinator, IHT Curriculum Development Committee for his continuous technical assistance and co-ordination to prepare this curriculum. The technical team comprising the faculty members of the Centre for Medical Education (CME) deserve special appreciation.

Lastly, I would like to extend my deep and sincere gratitude to all principals & teachers of different IHTs, subject experts, faculty members and others computer and secretarial support staff of CME who shared their expertise and worked hard to produce this valuable document.

Professor Dr Syeda Shahina Subhan
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Acknowledgement

This is indeed a pleasant responsibility to bring out this curriculum on Diploma in Health Technology course, which has been developed through a participatory approach by a team of policy teachers of IHTs and medical educationists. It aims to review and update the Health Technology (HT) curriculum.

I would like to express my deep gratitude to Prof Dr A.H. M. Enayet Hussain, Director General, DGME, for his overall supervision in this activity along with ADG (Admin), ADG (Education) & Directors of DGME, under the leadership of whom the plan of reviewing and updating the IHT curriculum has been materialized, and who provided immense support and encouragement to finish the work. My cordial thanks are extended to Dr Sangay Wangmo, Team leader (Health System) & Mr Md Nuruzzaman, NPO (HRH), WHO Bangladesh country office for financial & technical support for this activity.

I am grateful to all the resource persons/teachers from different institutes, subject experts, principals of IHT specially the faculty of Center for Medical Education (CME), who devoted their immense efforts, time and hard work to develop this curriculum. My special thanks to Professor Dr. Md. Humayun Kabir Talukder, Professor (Curriculum Development & Evaluation), Centre for Medical Education (CME), working co-ordinator, IHT curriculum reviewing & updating committee for his continuous efforts without which it would not have been possible to complete this work. My thanks to all other faculty members & staffs of CME, who were involved directly or indirectly in preparation of this curriculum.

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List of Content

Content		Page no
Course Overview		7
1st Year16		
I	English	16
II	Basic Anatomy	20
III	Basic Physiology	22
IV	Basic Community Medicine & Behavioural Sciences	23
V	Basic computer science	28
2nd Year		
I	Physics	33
II	Chemistry	35
III	Basic Microbiology & Parasitology	37
IV	Environmental and Occupational Health	40
V	Epidemiology	51
3rd Year		
I	Public Health	60
II	Biostatistics	68
III	Food Safety Management.	76
4th Year		
I	Public Heath Laws	81
II	Food Inspection	94
	<i>Special Lab Attachment</i>	
Outline of Institutional Academic Laboratory		105
Outline of Special Laboratory Attachment		109

Course Overview

Course Aim

After successful completion of the three years diploma course, the Sanitary Inspectors shall acquire knowledge and skills, and attitudinally prepare themselves for ensuring safety and quality of food and thereby improve public health in Bangladesh.

Course Objectives

At the end of the course, the student will be able to-

- Acquire knowledge and skills on planning and managing including supervision with special attention to the public health in general and food safety and quality in particular
- Acquire knowledge and skills in implementing risk-based approach in planning and execution of food inspection
- Develop food safety plan and evaluate food safety management systems in food industries and other food establishments
- Describe and implement public health laws, rules and regulations particularly related food safety and quality including its implementation against the offenders contaminating and or adulterating food items
- Apply epidemiological knowledge and skills in prevention and control of diseases specially food and waterborne diseases, epidemiological studies on health events including monitoring and surveillance
- Enumerate environment, environmental and occupational health with particular relation to food safety and quality
- Evaluate environmental health situation including planning and management and evaluating waste disposal and sanitary measures for different set-up, with special attention to food safety.
- Impart health education emphasizing food safety education to the consumers, food handlers and vulnerable group particularly school children
- Describe vector control methods and integrated vector management and skills on entomological surveillance
- Evaluate healthy school setting, healthy market setting etc.
- Assess nutritional status, identify nutritional disorders and its prevention and control
- Identify relationship between food safety and quality with that of nutrition and public health and its importance
- Perform data collection, compilation and basic analysis of data related to public health and food safety.
- Describe demographic cycles, population trends and estimate population trends
- Evaluate safe water supply and sanitation activities in rural and urban areas.
- Evaluate public health engineering activities such as designing, costing, construction and maintenance of health and sanitation related infrastructures.

- Manage sanitation activities in respect of fairs, festivals and religious congregations etc.
- Identify the behavioural factors associated with food safety and quality
- Perform health activities in in emergency including food safety in emergency
- Identify professional responsibilities, its structure, ethical issues and application of ethical frameworks applicable for sanitary inspectorship profession
- Demonstrate values and attitudes consistent with high standard of ethical and professional conduct.
- Supervise the works done by health workers.

Course Details

A. Course Title: Diploma in Medical Technology of Sanitary Inspectorship

B. Course philosophy and rationale

The Diploma in Medical Technology (Sanitary Inspectorship) Course is a health technological professional course is offered to the in-service health assistants and equivalent other health workers as a part of their career development plan. Acquired knowledge and skills will enable the Sanitary Inspectors to perform the food safety activities in general and food inspection in particular and other relevant activities aiming at improving public health.

Course Entrance Requirements

Academic and other prerequisites

- i) HSC or equivalent.
- ii) Age limit 40 years on the date specified in the advertisement
- iii) Minimum 3 years service experiences as Health Assistant or equivalent other Health Workers as specified in the advertisement.
- iv) In -service candidates are eligible to apply only.

Selection process

Selection of the candidates will be done on the basis of aggregate marks obtained in the SSC and HSC examinations and taking into account the different quota approved by the government in the selection rules.

The candidates who have completed 5 (five) years service will get 2 additional marks per year which will be counted after 5 (five) years but not more than 10 marks (e.g.; for 6 years = 2, for 7 years= 4, for 8 years=6, for 9 years=8, and for 10 years = 10).

Candidates selected for admission will have to appear before the Medical Boards as organised by the respective Institute of Health of Technology.

Course structure and duration

Total duration of the course will be 4 years

The course will be of four years' duration. The total period is divided into 4 parts-1st year, 2nd year, 3rd year and 4th year. In each there will be 40 weeks of teaching and learning at the end of which there will be a year final examination. Supplementary examinations will be held 6 months of the year final examination.

Year	Duration
1 st Year	12 months
2 nd Year	12 months
3 rd Year	12 months
4 th Year	12 months

NB: All academic activities including yearly faculty examination of each phase must be completed within the specified time of the phase.

NB: Total duration for completion of the four years (4) course will be 07 years after admission in 1st year

E. Distribution of the papers with teaching /learning hour's as per year wise:

1st year

Exams	Papers	Subjects	Lecture (in hours)	Tutorial (in hours)	Institutional Academic Lab based Practical Training/ Demonstration (in hours)	Formative Exam		Summative exam		Total Hours
						Preparatory leave	Exam time	Preparatory leave	Exam time	
Teaching-learning both formative & summative assessment	I	English	66	34	-	7 days	10 days	10 days	15 days	100
	II	Basic Anatomy	70	60	70					200
	III	Basic Physiology	75	60	65					200
	IV	Basic Community Medicine & Behavioral science	150	50	-					200
	V	Basic computer science	25	-	75					100
		Total	395	195	210	17 days		25 days		800
		Grand total	800 hours			42 days				800 hours

2nd year

Exams	Papers	Subjects	Lecture (in hours)	Institutional Academic Lab based Practical Training/ Demonstration (in hours)	Formative Exam		Summative exam		Total Hours	
					Preparatory leave	Exam time	Preparatory leave	Exam time		
Teaching-learning both formative & summative	I	Physics	40	30	7 days	10 days	10 days	15 days	70	
	II	Chemistry	80	20					100	
	III	Basic Microbiology & Parasitology	80	20					100	
	IV	Environmental and Occupational Health	100	150					250	
	V	Epidemiology	100	200					300	
		Total	370	450	17 days		25 days		820	
		Grand total	820 hours			42 days				820 hours

3rd year

Exams	Papers	Subjects	Lecture (in hours)	Institutional Academic Lab based Practical Training/ Demonstratio n (in hours)	Formative Exam		Summative exam		Total Hours
					Preparator y leave	Exam time	Preparator y leave	Exam time	
Teaching-learning both formative & summative assessment	I	Public Health	100	150	7 days	10 days	10 days	15 days	250
	II	Biostatistics	80	120					200
	III	Food Safety Management	44	106					150
		Total	224	376	17 days		25 days		600
		Grand total	750 hours		42 days				600 hours

4th Year

Exams	Papers	Subjects	Theory (in hours)	Institutional Academic Lab based Practical Training/ Demonstration (in hours)	Special attachment at relevant lab based advance training (in hours)	Formative Exam		Summative exam		Total Hours
						Preparatory leave	Exam time	Preparatory leave	Exam time	
Teaching-learning both formative & summative assessment	I	Public Health Law	92	130	88	7 days	10 days	10 days	15 days	310
	II	Food Inspection	68	166	136					400
		Total	160	296	224	17 days		25 days		800
		Grand total	800 hours			42 days				800 hours

F. Teaching & learning methods, media and faculty members

The following teaching and learning methods will be followed:

1. Large Group Teaching Lecture aided by –
 - Multimedia
 - Computer
 - Chalk board
 - OHP/ Slide projector
 - Handouts
2. Small Group Teaching-
 - Tutorial/ Demonstration
 - Students interaction
3. Practical session-
 - Use of practical manual Chalk board
 - Performing the task/examination by the student
 - Writing the practical note book
 - Log book
4. Lab Placement-
 - In small groups for performing activities by the student themselves
5. Faculty members-
 - Subject oriented teacher (Professor/ Associate professor/ Assistant professor/Lecturer/Instructor will be illegible to perform lecture/theoretical class.
 - Subject oriented instructors will be illegible to perform practical/demonstration class.

G. Assessment

- Examination will be held on month of January & July of every year.

Assessment Methods:

- There will be in-course/formative (card/ item) and end-course/summative (terminal) assessment for the students in each part (1st, 2nd, 3rd & 4th year) of the course i.e. formative and year final examination.
 - There will be year final examination at the end of each academic year and one supplementary examination 6 months after each regular year-final examination.
 - Formative assessment will be done through items and cards ending exam.
- In the year-final examination marks allocation will be as follows:
- 50% from year-final written examination
 - 10% from the formative examinations (Card final examination/Item marks).
 - 40% from the oral and practical examinations.
 - In written assessment Short Answer Question (SAQ) and Multiple choice question (MCQ)-true/false, in practical along with traditional objective structure practical examination (OSPE) & in oral structure oral examination (SOE) will be utilized

Eligibility for appearing in the year-final examination:

- Certificate from the respective head of institutes regarding students obtaining at least 75% attendance in all aspects (theory, practical, tutorial, residential field practice) during one academic year.
- Obtaining at least 50% marks in the formative examinations.
- No objection Certificate from the respective head of institutes regarding taking part any activities contrary to the discipline of the institute.

- No student shall be allowed to appear in the Year II, Year III and Year IV Final examinations unless the student passes all the subjects of 1st, 2nd and 3rd year Final examinations respectively.

Carry on

- One can be eligible to attend the classes of 2nd year after passing at least 3 subjects among 5 subjects of 1st year.
- One can be eligible to attend the classes of 3rd year after passing at least 3 subjects among 5 subjects of 2nd year.
- One can be eligible to attend the classes of 4th year after passing at least 2 subjects among 3 subjects of 3rd year.

Assessment personnel:

- Subject oriented teacher (Professor/ Associate professor/ Assistant professor/Lecturer will be illegible to be an examiner, moderator and able to evaluate the examination script.
- Subject oriented instructors will be illegible to undertake the practical examinations

Grading

Numerical percentage of Marks	GPA letter Grade	GPA Numerical Grade (Grade points)
85% and above	A ⁺	4
81% to less than 85%	A	3.75
76% to less than 80%	A ⁻	3.5
71% to less than 75%	B ⁺	3.25
66% to less than 70%	B	3.00
61% to less than 65%	B ⁻	2.75
Only 60%	C	2.50
Less than 60%	F	0

Pass Marks/Grade-C

Written Exam - 60%
 Practical - 60%
 Oral - 60%

Student shall have to pass written, oral, practical and formative separately in each paper of the examination.

Results will be publish in GPA system and number of the subjects will be reflected in the academic transcript.

H. Examinations & distribution of marks as per each year

1st Year Examination

Paper	Subjects	Written Exam	Oral Exam	Practical Exam	Formative Exam	Total Marks
I	English	75	15	-	10	100
II	Basic Anatomy	100	40	40	20	200
IV	Basic Physiology	100	40	40	20	200
V	Basic Community Medicine & Behavioral Science	100	40	40	20	200
VI	Basic computer science	50	--	40	10	100
	Total	425	135	120	80	800

2nd Year Examination

Paper	Subjects	Written Exam	Oral Exam	Practical Exam	Formative exam	Total Marks
I	Physics	75	10	15	--	100
II	Chemistry	75	10	15	--	100
III	Basic Microbiology & Parasitology	100	40	40	20	200
IV	Environmental and Occupational Health	100	40	40	20	200
V	Epidemiology	100	40	40	20	200
	Total	450	140	150	60	800

3rd Year Examination

Paper	Subjects	Written Exam	Oral Exam	Practical Exam	Formative exam	Total Marks
I	Public Health	100	40	40	20	200
II	Biostatistics	100	40	40	20	200
III	Food Safety Management	100	40	40	20	200
	Total	300	120	120	60	600

4th Year Examination

Paper	Subjects	Written Exam	Oral Exam	Practical Exam	Formative exam	Total Marks
II	Public Health Law	100	40	40	20	200
II	Food Inspection	100	40	40	20	200
	Total	200	80	80	40	400

I. This curriculum is meant for the guidance of four groups for people --

- Students to guide them in what to learn and how to learn
- Teachers to guide them in what to teach and how to teach
- Examiners to guide them in what to evaluated and how to evaluated
- Concerned policy persons to guide how to implement this curriculum with proper--
 - Governance
 - Guidelines
 - Faculty members with updated organogram
 - Institutional academic lab
 - Attached OPD
 - Special lab attachment as per future job
 - Appropriate students friendly academic environment

- Teachers to be oriented about the implementation of curriculum
- Log book to be prepared

J. Required faculty members of the concerned subject/discipline are as follows to implement this curriculum --

- Professor..... 1
- Associate Professor..... 1
- Assistant Professor..... 2
- Lecturer..... 3
- Instructor..... 4
- Technologist..... 5

1st Year

Paper I: Subject - English

Total hours: 100 hour
Lecture: 66 hour
Practical / Tutorial: 34 hours

Total marks-100
Written-75
Oral & practical- 15
Formative 10

Objectives:

At the end of the course the students will be able to: -

- read & write any story in English and attain HSC level English proficiency
- show proficiency in English grammar (article, tense, voice, phrases & idioms)
- write letters in English (private, Official etc).
- translate & retranslate in English
- read and write essays on different topics in English
- develop listening skills in English
- communicate with each other in English
- read and write laboratory reports/findings in English
- follow written and oral instructions in English of the seniors/authorities

List of Competencies

Ability to--

- write Paragraph, Letter, Application & report in English
- show skill in reading, writing ,listening & Conversations in English
- understand & interpret any reports or manuals in English
- read & write any story in English and attain HSC level English proficiency
- write letters in English (private, Official etc.).
- translate & retranslate in English
- read and write essays on different topics in English
- develop listening skills in English
- communicate with each other in English

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Tutorial
1.	<p>Text book: English for Today-Published by N.C.T.B. (Intermediate)</p> <p>Unit- Three: Learning English.</p> <ol style="list-style-type: none"> 1. Learning a language 2. Why to learn English 3. How to learn English 4. Different learners, different ways 5. Dealing with grammar 6. Integrated skills development 7. How to use dictionary <p>Unit-Six: Our Environment.</p> <ol style="list-style-type: none"> 1. The environment and the ecosystem 2. How the environment is polluted. 3. The world is getting warmer. 4. Let's not be cruel to them. 5. Beware of pollution. 6. Forests should stay. 7. How to manage waste. <p>Unit-Twenty-four: People, People Everywhere</p> <ol style="list-style-type: none"> 1. What's the problem? 2. Kalim Majhee's boat. 3. The rootless. 4. Why is there discrimination? 5-7. The Revenge. 	16	

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Tutorial
2.	Grammar: Articles : <ul style="list-style-type: none"> ▪ Indefinite & definite articles Tense: <ul style="list-style-type: none"> ▪ Present, Past & Future tense Voice : <ul style="list-style-type: none"> ▪ Active voice ▪ Passive voice ▪ Voice change Speeches: <ul style="list-style-type: none"> ▪ Direct speeches ▪ Indirect speeches Linkers <ul style="list-style-type: none"> ▪ In addition ▪ Besides ▪ Moreover ▪ However ▪ Because ▪ Either or , neither nor Idioms & Phrases : Subjects & predicate Parts of speech- <ul style="list-style-type: none"> ▪ Noun & its classification ▪ Pronoun & its classification ▪ Adjective & its classification ▪ Verb-Adverb Conjugation Preposition Punctuation (capitalization, fragment, end, comma, semi colon, colon, hyphen, underlining) Spelling Wrong words Translation (Bengali to English, English to Bengali), short story writing, technical description, comprehension.	22	
	Paragraph writing : Letter writing: Application writing: Report writing :	10	
	Telegrams & E-mail:	2	

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Tutorial
	Communicative English :		
	▪ Reading skill	4	8
	▪ Writing skill	4	8
	▪ Listening skill	4	8
	▪ Conversations skill	4	10
	Total	66	34

Teaching Methods:

Lecture
 Practical/ Tutorial/Communication

Media:

Multi media,
 Laptop,
 OHP,
 White Board/marker
 Black board/ chalk
 Wall chart
 VCD, DVD, CD

Assessment:

Written – SAQ -75 marks
 Reading, Listening & conversation-15 marks
 Formative -10 marks

Paper II : Subject - Basic Anatomy

Total hours: 200 hours
Lecture: 70 hours
Tutorial : 60 hours
Practical/Demons: 70 hours

Total marks-200
Written-100
Oral-40
Practical- 40
Formative- 20

Objectives:

At the end of the course the students will be able to: -

- acquaint with the anatomical terminologies
- demonstrate a comprehensive knowledge base about the major anatomical organ, system and structure of human body
- identify major anatomical organ, system and structure of human body
- identify the specific structures and organs and application of such knowledge in studying their individual disciplines.
- do surface marking of important organ of human body.

List of Competencies:

Ability to--

- demonstrate a comprehensive knowledge base about the major anatomical organ, system and structure of human body
- identify major anatomical organ, system and structure of human body
- identify the specific structures and organs and application of such knowledge in studying their individual disciplines.
- do surface marking of important organ of human body.

Course Contents of Basic Human Anatomy

Sl. No	Topics/Lessons	Teaching/learning Hours		
		Lecture	Tutorial	Practical/ Demonstration
1.	Introductory Anatomy : a) Anatomical Terminologies : i) Definition of Anatomy ii) Anterior, Posterior, superior, inferior, medial, lateral & median plane. b) i) Systems of Human body ii) Human cell: structure and classification. iii) Cell division: types. Phases of mitosis iv) Tissue: Types of tissues.	10	05	10
2.	Musculoskeletal system: ▪ component ▪ Types of bones & joints ▪ short description of important bones	10	10	05
3.	Cardio-vascular system. ▪ Location & Basic structure of cardiovascular system ▪ Short description of heart, major arteries, capillaries/veins	10	05	10
4.	Respiratory system ▪ Basic structure of respiratory system ▪ Description of larynx, trachea, bronchi, bronchioles and alveoli ▪ Gross Anatomy of lung	06	06	10

Sl. No	Topics/Lessons	Teaching/learning Hours		
		Lecture	Tutorial	Practical/ Demonstration
5.	Gastro-intestinal and Hepatobiliary system: <ul style="list-style-type: none"> ▪ Short description of the different parts of alimentary system: mouth, tongue, esophagus, stomach, small and large intestine, rectum & anal canal ▪ Anatomy of salivary glands, pancreas, liver, gall bladder 	10	10	10
6.	Genito –urinary system: <ul style="list-style-type: none"> ▪ Anatomy of urinary system ▪ Male genital system: ▪ Female genital system 	10	10	10
7.	Nervous system and Endocrine system. <ul style="list-style-type: none"> ▪ Basic structure of nervous system ▪ Parts of nervous system and short description of brain, spinal cord, cranial nerves, peripheral nerves ▪ Autonomy of nervous system and short description of sense organs-eye, ear, nose, throat, tongue and skin ▪ Important endocrine glands 	12	12	10
8.	Lymphatic System : <ul style="list-style-type: none"> ▪ Anatomy of lymph nodes and vessels 	02	02	05
	Total	70	60	70

Teaching Methods:

Lecture
Tutorial
Practical/ Demonstration

Media:

Multimedia,
Laptop,
OHP,
White Board/Marker,
Black/board
Skeleton
Wall chart
Microscope

Assessment:

Written – SAQ= 80 marks, MCQ=20 marks
Practical or OSPE 40 marks, Oral-40 marks, formative-20 marks

Paper III : Subject - Basic Physiology

Total hours: 200 hours

Lecture:75 hours

Tutorial: 60

Practical: 65

Total marks-200

Written-100

Oral -40

Practical- 40

Formative- 20

Objectives:

At the end of the course the students will be able to: -

- Demonstrate a comprehensive knowledge on functional aspects of different important components, organs and systems of human body.
- Apply the practical knowledge of human physiology in studying and performing the allotted tasks in their individual discipline.

List of Competencies

- Ability to demonstrate a comprehensive knowledge on functional aspects of different important components, organs and systems of human body.
- Ability to apply the practical knowledge of human physiology in studying and performing the allotted tasks in their individual discipline.

Course Contents of Basic Human Physiology

Sl. No	Topics/Lessons	Teaching/learning Hours		
		Lecture	Tutorial	Practical/ Demonstration
1.	Introductory Physiology: <ul style="list-style-type: none"> ▪ Physiological terminologies ▪ Basic structure and organizations of human body ▪ Cell physiology and metabolism/multiplication of living cells ▪ General functions of different systems of the body: Musculoskeletal/Respiratory/ Circulatory/Digestive/Urinary/Nervous/ Endocrine/Immune/ Reproductive 	10	04	10
2.	Musculoskeletal system : <ul style="list-style-type: none"> ▪ Physiological components of musculoskeletal system ▪ Functions of important muscles, bones & joints of human body ▪ Movements of joints 	10	10	05
3.	Cardiovascular System: <ul style="list-style-type: none"> ▪ Functions of circulatory system ▪ Composition of Blood and their Functions ▪ Conductive system of heart & Cardiac cycle ▪ Physiology of Blood Pressure 	10	05	10

Sl. No	Topics/Lessons	Teaching/learning Hours		
		Lecture	Tutorial	Practical/ Demonstration
4	Respiratory system : <ul style="list-style-type: none"> ▪ Functions of respiratory system ▪ Mechanism of breathing 	05	05	10
5	Digestive and hepatobiliary system: <ul style="list-style-type: none"> ▪ Definition of digestion, absorption, metabolism ▪ Digestion, absorption & metabolism of carbohydrate, fat & protein ▪ Nutritional deficiency disorders : anemia, iodine deficiency, vitamin deficiencies ▪ Functions of liver, pancreas and gall bladder ▪ Composition & functions of different digestive juices & bile 	10	10	10
6	Genitourinary system: <ul style="list-style-type: none"> ▪ Functions of Kidney ▪ Formation, appearance and composition of urine ▪ Functions of reproductive organs of both sexes: uterus/ovary/fallopian tube/vagina/penis/testes/scrotum/vas deferens/prostate 	10	10	10
7	Nervous system, organs of special sense: <ul style="list-style-type: none"> ▪ Functions of motor, sympathetic & parasympathetic nervous system ▪ Functions of cranial nerves ▪ Cerebrospinal fluid formation, composition & function ▪ Functions of special sense organs-eye, ear, nose, tongue and skin ▪ Functions of the endocrine glands & hormones secreted by them: Pituitary / thyroid / parathyroid / adrenal /gonads/pancreas/placenta 	12	10	10
8	Immune System : <ul style="list-style-type: none"> ▪ Definition/classification and components of immune system ▪ Cells and tissues of immune system & their functions 	05	05	
9	Lymphatic System : <ul style="list-style-type: none"> ▪ Structure & functions of lymph nodes and vessels 	03 05	01	
	Total	75	60	65

Teaching Methods: Lecture, Tutorial, Practical/ Demonstration

Media:

Multimedia, Laptop, OHP, White Board/Marker, Black board/chalk, Wall chart, Lab. Reagent & Apparatus, Microscope

Assessment:

Written – SAQ= 80 marks, MCQ=20 marks

Practical or OSPE 40 marks, Oral-40 marks, formative-20 marks

Paper IV : Subject – Basic Community Medicine & Behavioural Science

Total hours: 200 hour
Lecture: 150 hour
Practical / Tutorial: 50 hours

Total marks-200
Written-100
Oral-40
Practical- 40
Formative- 20

Objectives

At the end of the course the students will be able to: -

- describe the general aspects of community medicine
- describe the basic concepts of epidemiology
- explain the concept of primary health care
- define organizations of health services and major health program in Bangladesh
- carry on elementary bio-statistics
- describe the concept of Demography and Family Planning
- define Maternal and Child Health (MCH), describe its objectives and explain the importance of ante-natal and post-natal care for mother and children
- define food and nutrition and be aware of nutritional problems in Bangladesh
- acquaint themselves with occupational health hazards and their preventive and protective measures
- describe the principles of health education and their application in the community
- acquaint themselves with environmental pollution and methods of prevention and control of pollution
- explain the basic concept of Essential Service Package (ESP)

List of Competencies:

Ability to --

- describe the general aspects of community medicine
- describe the basic concepts of epidemiology
- explain the concept of primary health care
- define organizations of health services and major health program in Bangladesh
- carry on elementary bio-statistics
- describe the concept of Demography and Family Planning
- define Maternal and Child Health (MCH), describe its objectives and explain the importance of ante-natal and post-natal care for mother and children
- define food and nutrition and be aware of nutritional problems in Bangladesh
- acquaint themselves with occupational health hazards and their preventive and protective measures
- describe the principles of health education and their application in the community
- acquaint themselves with environmental pollution and methods of prevention and control of pollution
- explain the basic concept of Essential Service Package (ESP)

Course Contents of Basic Community Medicine

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Practical/ Demonstration
1.	Introductory community medicine: <ul style="list-style-type: none"> ▪ Definition of Community Medicine ▪ Concept of health : Definition / Dimensions / Spectrum / Determinants / Indicators ▪ Concept of general principles for prevention and control of communicable and Non-communicable diseases ▪ Concept of health promotion: Definition / Interventions 	16	10
2.	Primary health care: <ul style="list-style-type: none"> ▪ Definition/Elements/ Principles/Scope 	05	02
3.	Health care services and organization: <ul style="list-style-type: none"> ▪ Primary/Secondary/Tertiary Health Care services ▪ WHO/UNDP/UNICEF/CARE/ International Red Crescent / BIRDEM / ICDDR,B 	06	02
4.	Basic Epidemiology: <ul style="list-style-type: none"> ▪ Definition /Aims/Methods/Scope ▪ Definition of epidemiological terms eg. Epidemic/Endemic/Pandemic/Sporadic/ Zoonotic disease/ Incubation period/ period of communicability/ Epidemiological Triad/ Infection/ Contamination/ Infestation etc. ▪ Major health programs in Bangladesh ▪ Medical Information system (MIS) 	12	06
5.	Basic Bio-statistics : <ul style="list-style-type: none"> ▪ Definition /Scope/Functions/Importance and uses of Biostatistics, Medical statistics, Health statistics, Vital statistics ▪ Definition of vital events ▪ Definition/types/characteristics/functions/importance/sources/collection and presentation of data ▪ Morbidity/Mortality/Fertility statistics 	17	04

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Practical/ Demonstration
6.	Demography and family planning. <ul style="list-style-type: none"> ▪ Demography: Definition/Focus/Process/Stages/Cycle and how to conduct census ▪ Family Planning: Definition/ Objectives/ Scope/Health aspects/Benefits ▪ Contraceptive methods: Short description /Advantages/Disadvantages/Indications/ Contraindications/ Complications 	12	04
7.	Maternal and Child Health Care (MCH): <ul style="list-style-type: none"> ▪ Introduction/Definition/Aims & Objectives / Components of MCH ▪ Maternal health care: Antenatal/Intra natal/Postnatal ▪ Care of the New-born/Under 5 children ▪ Indicators of MCH care: MMR, IMR etc 	10	
8.	Food and nutrition: <ul style="list-style-type: none"> ▪ Food: Definition/Functions/Classification ▪ Sources/types/functions/daily requirements and deficiency of protein, fat, carbohydrate, vitamins and minerals ▪ Definition of nutrition /Balanced Diet ▪ Malnutrition: Definition/Forms/Causes and prevention ▪ Common nutritional problems of Bangladesh: low Birth Weight/Protein Energy Malnutrition/ Nutritional Blindness/ Nutritional Anemia/ Lathyrism 	15	06
9.	Occupational Health : <ul style="list-style-type: none"> ▪ Occupational health : Definition /Objectives ▪ Occupational Hazards: Introduction /Types ▪ Occupational diseases: Definition/Classification/Prevention and control 	08	02
10.	Health education behavioral science and Ethics: <ul style="list-style-type: none"> ▪ Health Education: Definition/Importance / Objectives / Components/ Principles/Methods /Media ▪ Communication Skills: Definition/Key elements /Barriers ▪ Behavioral Science : Introduction & concept ▪ Ethics: Introduction and concept 	12	04

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Practical/ Demonstration
11.	Environment and sanitation: <ul style="list-style-type: none"> ▪ Definition of environment, pollution, sanitation and environmental sanitation ▪ Water: Safe wholesome water/Source of water/water pollution/Hazards of water pollution /water borne diseases/Hardness of water/Purification of water ▪ Air : Definition/Composition ▪ Air pollution : Sources, pollutants, indicators, health & other effects, prevention & control ▪ Ventilation: Definition/Standards/ Types/ Criteria of good ventilation / effects of good ventilation ▪ Solid waste: Definition/Types/Sources/Health hazards ▪ Disposal of solid waste: Dumping/Controlled tipping or sanitary land fill/ incineration/ composting/Manure pits/Burial ▪ Excreta or night soil: Public health importance/Health hazards/how disease occurs from it/Sanitation Barrier/ Methods of excreta disposal (Unsewered area/Sewered area) 	25	04
12.	First Aid : <ul style="list-style-type: none"> ▪ Definition / Principles of First Aid ▪ First Aid Box-List of contents and their uses ▪ First Aid of : Cuts, bleeding, burn, shock, dog bite, snake bite 	12	06
	Total	150	50

Teaching Methods:

Lecture
Tutorial
Practical/ Demonstration

Media:

Multi media, Laptop, OHP, White Board/Marker,
Black board/chalk
Wall chart
Models & Samples

Assessment:

Written – SAQ= 80 marks, MCQ=20 marks
Practical or OSPE 40 marks, Oral-40 marks, formative-20 marks

Paper V : Subject - Basic Computer Science

Total hours: 100 hour

Lecture: 25 hour

Practical / Tutorial: 75hours

Total marks-100

Written-50

Practical- 40

Formative-10

Objectives:

At the end of the course the students will be able to: -

- acquaint with the modern computer technology
- start, Shutdown and restore the windows
- open, close & edit the file
- develop skills in ms word, ms-excel, power point, internet
- create chart, graph , tables etc.
- install different programs & software
- prepare reports of various investigations
- do internet browsing & other applications of internet

List of Competencies

Ability to--

- deal with the modern computer technology
- show skills in ms word, ms-excel, power point
- prepare reports of various investigations
- internet browsing & other applications of internet

Course Contents of Basic Computer Science

Sl No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Tutorial/ Practical
1.	<p>Detailed Contents :</p> <p>Relevant Instruction for Practical :</p> <ul style="list-style-type: none"> ▪ Information Technology -its concept and scope ▪ Computers for information storage, information seeking, information processing and information transmission ▪ Elements of computer system - computer hardware and software: data -numeric data, numeric data; contents of program, processing ▪ Computer organization, block diagram of a computer, CPU, memory ▪ Input devices; keyboard, mouse etc; output devices; VDU and Printer, scanner, Plotter ▪ Electrical requirements, inter-connections between units, connectors and cables ▪ Secondary storage; magnetic disks-tracks and sectors, optical disk (CD and DVD Memory), primary and secondary memory: RAM, ROM, PROM etc. ▪ Capacity; device controllers, serial port, parallel port system bus 47 ▪ Exercises on file opening and closing; memory management; device management; device management and input-output (I/O) management with respect of windows ▪ Installation concept and precautions to be observed while installing the system and software ▪ Introduction about Operating systems such as and Windows ▪ Special features, various commands of MS word and MS- Excel, Power -point ▪ About the internet-server types, connectivity (TCOP/IP, shell); applications of internet like: e-mail and browsing ▪ Various Browsers like WWW (World wide web); hyperlinks; HTTP (Hyper Text Transfer Protocol); FTP (File Transfer Protocol) ▪ Basic of Networking -LAN, WAN, Topologies 	25	
	<ul style="list-style-type: none"> ▪ Give a PC, name its various components and list their functions ▪ Identification of various parts of a computer and peripherals ▪ Practice in installing a computer system by giving connection and loading the system software and application software ▪ Installation of DOS and simple exercises on TYPE, REN, DEL, CD, MD, COPY, TREE, BACKUP commands ▪ Exercises on entering text and data (Typing Practice) ▪ Installation of Windows 98 or 2000 etc. ▪ Features of windows as an operating system ▪ Start ▪ Shutdown and restore ▪ Creating and operating on the icons ▪ Opening, closing and sizing the windows ▪ Using elementary job commands like-creating, saving, modifying, finding and deleting a file ▪ Creating and operating on a folder ▪ Changing setting like, date, time color (back ground and fore ground) ▪ Using short cuts ▪ Using on line help 		

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Tutorial/ Practical
	<ul style="list-style-type: none"> ▪ MS-WORD ▪ File Management Opening, creating and saving a document, locating files, copying contents in some different file (s), protecting files, Giving password protection for a file ▪ Page set up : Setting margins, tab setting, ruler, indenting ▪ Editing a document : Entering text, Cut, copy, paste using tool-bars ▪ Formatting a document : Using different fonts, changing font size and color, changing the appearance through bold/italic/underlines, highlighting a text, changing case, using subscript and superscript using different underline methods ▪ Aligning of text in document, justification of document, Inserting bullets and numbering : ▪ Formatting paragraph, inserting page breaks and column breaks ▪ Use of headers, footers: Inserting footnote, end note, use of comments ▪ Inserting date, time, special symbols, importing graphic images, drawing tools ▪ Tables and Borders Creating a table, formatting cells, use of different border styles, shading in tables, merging of cells, partition of cells, inserting and deleting row in a table ▪ Print preview, zoom, page set up, printing options ▪ Using Find, Replace options ▪ Using Tools like: Spell checker, help, use of macros, mail merge, word content and statistics, printing envelopes ▪ Using shapes and drawing toolbar ▪ Working with more than one window in MS Word, ▪ How to change the version of the document from one window OS to another ▪ Conversion between different text editors, software and MS word 		30

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Tutorial/ Practical
	<p>MS -Excel :</p> <ul style="list-style-type: none"> ▪ Starting excel, open worksheet, enter, edit, data, formulas to calculate values, format data, create chart, printing chart, save worksheet, switching from another spread sheet ▪ Menu Commands : Create, format charts, organize, manage data, solving problem by analyzing data, exchange with other applications. Programming with MS Excel, getting information while working ▪ Work Books : Managing workbooks (create, open, close, save) working in work books, selecting the cells, choosing commands, data entry techniques, formula creation and links, controlling calculations, working with arrays ▪ Editing a worksheet, copying, moving cells, pasting, inserting, deleting cells, rows, columns, find and replace text, numbers of cells, formatting worksheet : ▪ Creating a chart : Working with chart types, changing data in chart, formatting a chart, use chart to analyze data ▪ Using a list to organize data, sorting and filtering data in list ▪ Retrieve data with MS -Query: Create a pivot table, customizing a pivot table. Statistical analysis of data. ▪ Customize MS-Excel: How to change view of worksheet, outlining a worksheet, customize workspace, using templates to create default workbooks, protecting work ▪ Exchange data with other application: linking and embedding, embedding objects, linking to other applications, import, export document 		20
	<p>Power Point :</p> <ul style="list-style-type: none"> ▪ Making Slide following the rules & principles ▪ Slide Projection 		10
	<p>Internet and its Applications :</p> <ul style="list-style-type: none"> ▪ Log -in to internet ▪ Navigation for information seeking on internet ▪ Browsing and down loading of information from internet ▪ Sending and receiving e-mail ▪ Creating a message ▪ Creating and address book ▪ Attaching a file with e-mail message ▪ Receiving a message ▪ Deleting message 		15
	Total=	25	75

Teaching Methods:

Lecture
Practical

Media:

Computer
Multi media
Computer lab.
Internet connection
White Board
Marker

Assessment:

Written – SAQ- 50 marks
Oral and Practical – 40 marks
Formative – 10 marks

2nd Year

Paper I : Subject - Physics

Total hours: 70 hour
Lecture : 40hour
Practical/Tutorial: 30 hours

Total marks -100
Written – 75
Oral -10
Practical - 15

Objectives:

At the end of the course, the students will be able to-

- define Physics and state the importance of Physics in the Health Care System.
- describe the different systems of measurement and weights.
- demonstrate basic knowledge on measurement of density and specific gravity of a substance.
- demonstrate basic knowledge on fundamental aspects of heat and temperature, sound, light, electricity and magnetism.

List of Competencies:

Ability to

- define Physics and state the importance of Physics in the Health Care System.
- describe the different systems of measurement and weights.
- demonstrate basic knowledge on measurement of density and specific gravity of a substance.
- demonstrate basic knowledge on fundamental aspects of heat and temperature, sound, light, electricity and magnetism.

Course Contents of Physics

Sl.No	Topic/Lessons তত্ত্বীয়	Teaching/Learning Hours	
		Lecture	Practical
১।	বলবিদ্যা ও পদার্থের ধর্ম : ➤ সরল রেখার গতি, গতির সমীকরণ, নিউটনের গতির সূত্র ত্বরণ ও বল, খাত বল, ভেকটর ও সেলের রাশি। ➤ কৌণিক গতি, কৌণিক বেগ ও ত্বরণ বৃত্তাকার পথে গতি, কেন্দ্রভিগ বল। ➤ কাজ, ক্ষমতা ও শক্তি, শক্তির সংরক্ষণ নীতি। ➤ সরল দোল গতি, সরল দোলক ➤ আর্কিমিডিসের সূত্র ও তার প্রয়োগ আপেক্ষিক গুরুত্ব নির্ণয়।	০৮ ঘন্টা	
২।	তাপ : তাপমিতি, তাপের একক, আপেক্ষিক তাপ, তাপীয় ক্ষমতা পানিসম ও সুপ্ততাপ এবং ইহাদের নির্ণয় পদ্ধতিঃ সরলীয় পদ্ধতিতে তাপের পরিবাহিতা নির্ণয়।	৫ ঘন্টা	
৩।	শব্দ : ➤ শব্দের উৎপত্তি ও শব্দ সালান, আড় তরঙ্গ ও দীঘল তরঙ্গ শব্দের ব্যভিচার ও বীট। বীটের সাহায্যে কম্পন সংখ্যা নির্ণয়। ➤ শব্দের বেগ নির্ণয়। ➤ টানা তারের আড় কম্পন, সূত্রের প্রমাণ।	৫ ঘন্টা	
৪।	আলোক : ➤ গোলীয় পৃষ্ঠে প্রতিফলন। ➤ সমতল ও গোলীয় পৃষ্ঠে প্রতিফলন। সম্পূর্ণ প্রতিফলন, প্রতিসরাংক, প্রিজম প্রতিসারণ। ➤ লেন্সঃ উত্তল ও অবতল লেন্স। লেন্সের শক্তি ও বিবর্ধন লেন্স সংযোজন। চোখের ত্রুটি সমূহ ও প্রতিকার। ➤ আলোক যন্ত্র-মাইক্রোস্কোপ।	৫ ঘন্টা	

৫।	চুম্বক : <ul style="list-style-type: none"> ➤ চুম্বকনের বিভিন্ন পদ্ধতিঃ চুম্বকের মতবাদ, চুম্বকের ক্ষেত্র ও প্রবাল্য। বিপরীত বর্ণীয় সূত্র প্রান্তমুখী ও প্রস্থমুখী অবস্থানে চুম্বকের প্রাবল্য। বিক্ষিপী চুম্বকমান যন্ত্র ও ইহার ব্যবহার। ➤ ভূচুম্বকত্ব। 	৪ ঘন্টা	
৬।	তড়িৎ : <ul style="list-style-type: none"> ➤ স্থির তরিৎ, চার্জের অস্তিত্ব ও প্রকৃতি নির্ণয়। বৈদ্যুতিক আবেশ, কুলম্বের সূত্র, ধারকত্ব, তড়িৎ বিভব। সমান্তরাল পাত ধারক। ➤ বিদ্যুৎ কোষ, তাদের কেন্দ্রে উৎপন্ন চুম্বকক্ষেত্র। বিদ্যুৎ প্রবাহ ও চার্জের একক। ➤ ওহমের সূত্র, বিভব বৈষম্যের একক। রোধ ও আপেক্ষিক রোধ, রোধের একক, রোধ সংযোজন, এমিটার, ভোল্ট মিটার। ➤ বৈদ্যুতিক পরিমাপ, হুইট স্টেম ব্রিজ, মিটার ব্রিজ, পোস্ট অফিস বক্স ও পাটেন শিও মিটার। ➤ তড়িৎ প্রবাহ ও উত্তাপ, জুলের সূত্র, বৈদ্যুতিক পদ্ধতিতে নির্ণয়। ➤ তড়িৎ প্রবাহে রাসায়নিক ক্রিয়া, তড়িৎ বিশেষণ, সূত্র ও ইহাদের প্রমাণ। ➤ তড়িৎ চুম্বকীয় আবেশ। 	১৩ ঘন্টা	
	ব্যবহারিক	৪০	

Sl.No	Topic/Lessons	Teaching/Learning Hours	
		Lecture	Practical
৭।	১। শাইড ক্যালিপার্স, স্ক্রুজ ও স্পেরোমিটারের ব্যবহার শিক্ষা। ২। পানি অপেক্ষা হালকা/ভারি তরল ও কঠিন পদার্থের হাইড্রো-স্টেটিক ব্যালেন্স, নিকলসন হাইড্রোমিটার ও আঃ হাইড্রো বোতলের সাহায্যে আপেক্ষিক গুরুত্ব নির্ণয়। ৩। সরল দোলকের সাহায্যে জি এর মান নির্ণয়। ৪। একটি ক্যালরিমিটারের সাহায্যে পানিসম নির্ণয়। ৫। কঠিন ও তরলের আপেক্ষিক তাপ নির্ণয়। ৬। অবতল দর্পনের ফোকাস দূরত্ব নির্ণয়। ৭। প্যারালাক্স পদ্ধতিতে উত্তল লেন্স ফোকাস দূরত্ব নির্ণয়। ৮। একখানা কাচ ফলকের প্রতিসরাংক নির্ণয়। ৯। ওহমের সূত্রের সত্যতা নির্ণয়। ১০। যে কোন দৈর্ঘ্যের তারে আপেক্ষিক রোধ নির্ণয়। ১১। নাশ পদ্ধতিতে দুইখানা দৃষ্ট চুম্বকের চৌম্বক ড্রামকের তুলনা।		৩ ঘন্টা ৩ ঘন্টা ৩ ঘন্টা ২ ঘন্টা ৩ ঘন্টা ২ ঘন্টা ২ ঘন্টা ৩ ঘন্টা ৩ ঘন্টা ৩ ঘন্টা ৩ ঘন্টা ৩ ঘন্টা
	মোট : ৭০ ঘন্টা	৪০	৩০

মান বন্টনঃ তত্ত্বীয় = ৬০

- ১। পদার্থের সাধারণ ধর্ম, আলোক ও তড়িৎ প্রতিটি শাখা থেকে ৮ নম্বরের দুটি ও ৪ নম্বরের ২টি করে মোট (৬টি + ৬টি) = ১২টি প্রশ্ন আকারে।
 তন্মধ্যে ৮ নম্বরের ১টি করে ৩ শাখায় ৩টি ও ৪ নম্বরের ১টি করে ৩ শাখার ৩ টি অর্থাৎ মোট ৬টি প্রশ্নের উত্তর দিতে হবে।

$$8 \times 1 \times 3 = 24$$

$$4 \times 1 \times 3 = 12$$

- ২। শব্দ ও তাপ ও চুম্বকতত্ত্ব প্রতিটি শাখা থেকে ৪ নম্বরের ৪টি করে মোট ১২টি প্রশ্ন থাকবে। সেগুলোর মধ্যে থেকে ২টি করে মোট ৬টি প্রশ্নের উত্তর দিতে হবে।

$$4 \times 2 \times 3 = 24$$

দ্রষ্টব্যঃ বলবিদ্যা ও পদার্থের ধর্ম থেকে ও অন্য যে কোন শাখা থেকে ১টি পরীক্ষণ করতে হবে।

ব্যবহারিকঃ ক্লাস রেকর্ড ৯+১ নং ও ২নং পরীক্ষণ ৮ করে = ১৫ মার্কস

মৌখিক ও ফরমেটিভ = ১০, লিখিত = ৭৫ মার্কস

মোট : তত্ত্বীয়+ব্যবহারিক+মৌখিক = ১০০ মার্কস

Paper II: Subject - Chemistry

Total hours: 100 hour
Lecture : 80 hour
Practical/Tutorial: 20 hours

Total marks -100
Written – 75
Oral - 10
Practical - 15

Objectives:

At the end of the course, the students should be able to:

- describe fundamentals in physical chemistry.
- explain common laboratory process.
- identify organic and inorganic chemical compounds.
- describe the different aspects of metals, non-metal and gaseous substances.

List of Competencies:

Ability to--

- describe fundamentals in physical chemistry.
- explain common laboratory process.
- identify organic and inorganic chemical compounds.
- describe the different aspects of metals, non-metal and gaseous substances.

Course contents of Chemistry

Sl.No	Topic/Lessons	Teaching/Learning Hours	
		Lecture	Practical
	গ্রুপ -ক ভৌত রসায়ন		
১।	ভৌত ও রাসায়নিক পরিবর্তন ও এদের মধ্যে পার্থক্য।	১ ঘন্টা	
২।	পদার্থের গঠনঃ অণু ও পরমাণু-অণুর সংজ্ঞা, আন্তঃআণবিক দূরত্ব, আন্তঃআণবিক, কঠিন, তরল, গ্যাস, পরমাণু, পারমাণবিক ও আনবিক ওজন।	৫ ঘন্টা	
৩।	সাধারণ পরীক্ষাগার প্রণালীঃ দ্রবণ, অভিস্রবণ, পরিস্রাবণ ও অতিপূক্ত দ্রবণ, দ্রাব্যতা, বাষ্পীভবন, পাতন, আংশিক পাতন, উর্ধ্বপাতন, কেলসন।	৪ ঘন্টা	
৪।	প্রতীক, সংকেতঃ প্রতীক, আনবিক সংকেত, যোজ্যতা, রেডিক্যাল এবং তাদের যোজনী, যোজনী থেকে আনবিক সংকেত নির্ণয়, গাঠনিক সংকেত।		
৫।	রাসায়নিক বিক্রিয়াঃ বিভিন্ন প্রকারের রাসায়িকি ক্রিয়া, রাসায়নিক বিক্রিয়া ঘটানোর উপায় সমূহ।	৪ ঘন্টা	
৬।	অম্ল, ক্ষারক ও লবন।		
৭।	গ্যাসের ধর্ম-বয়েলের সূত্র, চার্লসের সূত্র।	৪ ঘন্টা	
৮।	মৌলের রাসায়নিক তুল্যাংক বা যোজন ভার।	২ ঘন্টা	
৯।	পরমানুর গঠন এবং যোজ্যতার ইলেকট্রনীয় মতবাদ।	২ ঘন্টা	
	বিভিন্ন রাসায়নিক বন্ধন।	২ ঘন্টা	
১০।	ক) এভোগ্যাড্রে সূত্র খ) ভরক্রিয়া সূত্র।		
১১।	রাসায়নিক সংযোগ বিধিঃ	৪ ঘন্টা	
	ক) ভরের নিত্যতা সূত্র।	২ ঘন্টা	
	খ) নির্দিষ্ট অনুপাত সূত্র।	৫ ঘন্টা	
	গ) গুনানুপাত বিধি।		
	ঘ) বিপরীত অনুপাত সূত্র।		
	ঙ) গ্যাস আয়তন সূত্র।		
	গ্রুপ -খ অধাতুঃ		

Sl.No	Topic/Lessons	Teaching/Learning Hours	
		Lecture	Practical
১।	নিম্নোক্ত পদার্থ গুলোর উৎস, প্রস্তুতি, ধর্ম এবং ব্যবহারঃ	৭ ঘন্টা	
ক)	অক্সিজেন, ওজোন, পানি ও হাইড্রোজেন পার অক্সাইড।		
খ)	হোলাজেন সমূহঃ ক্লোরিন, রোমিন, আয়োডিন ও হাইড্রো ক্লোরিক এসিড।		
গ)	নাইট্রোজেন, হাইড্রোজেন সালফাইট, সালফার ডাইঅক্সাইড।		
ঘ)	সালফার, হাইড্রোজেন সালফাইট, সালফার ডাইঅক্সাইড, সালফিউরিক এসিড।		
ঙ)	ফসফরাস চ) জারন-বিজারনঃ জারক ও বিজারক পদার্থ		
২।	ধাতুঃ নিম্নোক্ত পদার্থ গুলোর উৎস, প্রস্তুতি, ধর্ম এবং ব্যবহারঃ	৬ ঘন্টা	
ক)	সোডিয়াম-সোডিয়াম হাইড্রোঅক্সাইড, সোডিয়াম কার্বনেট, সোডিয়াম ক্লোরাইড।		
খ)	ক্যালসিয়াম-ক্যালসিয়াম কার্বনেট, ক্যালসিয়াম ফ্লোরাইড, ক্যালসিয়াম সালফেট, বি-চিং পাউডার।	১ ঘন্টা	
৩।	কপার -কপার অক্সাইড, কপার সালফেট, কপার ফ্লোরাইড	১ ঘন্টা	
৪।	জিংক - জিংক অক্সাইড, জিংক ফ্লোরাইড, জিংক সালফেট।		
৫।	এলুমিনিয়াম - এলুমিনিয়াম ফ্লোরাইড, এলুমিনিয়াম সালফেট।	১ ঘন্টা	
৬।	আয়রন - আয়রন সালফেট।	১ ঘন্টা	
৭।	লেড - লেড অক্সাইড।	১ ঘন্টা	
৮।	সিলভার - সিলভার নাইট্রেট।	১ ঘন্টা	
	গ্রুপ - গ জৈব রসায়ন		
১।	জৈব রসায়নের সংজ্ঞা, জৈব ও অজৈব যৌগের মধ্যে পার্থক্য জৈব যৌগের গঠন, শ্রেণী বিভাগ, কার্যকরী বা ক্রিয়ালক্ষণীয় মূলক।	৪ ঘন্টা	
২।	জৈব যৌগের নিষ্কাশন ও বিশুদ্ধকরণ	১ ঘন্টা	
৩।	সম্পৃক্ত ও অসম্পৃক্ত হাইড্রোকার্বনঃ প্রস্তুত প্রণালী, ধর্ম এবং ব্যবহার -মিথেন, ইথেন, ইথিলিন, এসিটাইলিন।	২ ঘন্টা	
৪।	এলকোহল হ্যালোজেন জাতকঃ মিথাইল ফ্লোরাইড, ক্লোরোফর্ম এর প্রস্তুতি, ধর্ম ও ব্যবহার।	৪ ঘন্টা	
৫।	এলকোহলঃ শ্রেণী বিভাগ, মিথাইল এলকোহল, ইথানল এলকোহল ও গিসারিনের প্রস্তুতি, ধর্ম ও ব্যবহার।	২ ঘন্টা	
৬।	ডাই-ইথাইল ইথারঃ প্রস্তুতি, ধর্ম ও ব্যবহার।	১ ঘন্টা	
৭।	এলডিহাইড ও কিটোল সমূহঃ নিম্নলিখিত যৌগসমূহের প্রস্তুতি, ধর্ম ও ব্যবহার, ফরমালডিহাইড, এসিটালডিহাইড ও এসিটোন।	৩ ঘন্টা	
৮।	কার্বালিক এসিডঃ এসেটিক এসিড ও সাইট্রিক এসিডের প্রস্তুতি, ধর্ম ও ব্যবহার।	৩ ঘন্টা	
৯।	এলকোহল এ্যামাইনঃ এ্যামাইনের শ্রেণী বিভাগ, মিথাইল এ্যামাইন ও ইথাইল এ্যামাইনের প্রস্তুতি, ধর্ম ও ব্যবহার।	২ ঘন্টা	
১০।	এ্যারোমেটিক যৌগঃ নিম্নলিখিত যৌগসমূহের প্রস্তুতি, ধর্ম ও ব্যবহার। বেনজিন, টলুইন, ফ্লোরোবেজিন নাইট্রোবেজিন, অ্যানিলিন, কার্বলিক এসিড, বেনজালডিহাইড, বেনজোয়িক এসিড ও স্যালিসাইলিক এসিড।	৪ ঘন্টা	
	ব্যবহারিক :		
১।	অম্ল ও ক্ষারের মাত্রা নির্ণয়।		২০ ঘন্টা
২।	হাইড্রোজেন ও অক্সিজেনের প্রস্তুতি।		
৩।	সহজ জৈব ও অজৈব যৌগের আঙ্গিক বিশেষণ।		
	মোটঃ ১০০ ঘন্টা	৮০ ঘন্টা	২০ ঘন্টা

মান বন্টনঃ লিখিত পরীক্ষা=৭৫ মার্কস, ব্যবহারিক = ১৫ মার্কস, মৌখিক/ফরমেটিভ = ১০ মার্কস

গ্রুপ - ক- ২০ নম্বর

গ্রুপ - খ - ২০ নম্বর

গ্রুপ - গ - ২০ নম্বর

গ্রুপ -ক থেকে ৩টি, গ্রুপ -খ থেকে ৩টি এবং গ্রুপ -গ থেকে ৩টি মোট ৯টি প্রশ্ন থাকবে। তন্মধ্যে প্রত্যেক গ্রুপ থেকে অন্ততঃপক্ষে ২ টি করে মোট ৬টি প্রশ্নের উত্তর দিতে হবে।

Paper III: Subject - Basic Microbiology & Parasitology

Total hours: 100-hour

Lecture: 80 hour

Practical: 20 hours

Total marks-200

Written-100

Oral-40

Practical- 40

Formative- 20

Learning objectives:

At the end of the course the students will be able to –

- Define and classify microorganisms, define and explain microbiological terminologies.
- Identify, use and maintain microbiological articles, equipment, apparatus including microscope and mention parts when applicable.
- Clean, wash, decontaminate, disinfect & sterilization microbiological articles, instruments, glass wares etc.
- Define, classify, and mention morphology of bacteria, virus, fungus, parasite and helminth.
- Name medically important bacteria, virus, fungus, parasite, helminth and diseases caused by them.
- Explain anatomy bacteria and bacterial spores: pathogenicity of medically important bacteria, growth & multiplication of bacteria.
- Identify, staining and culture medically important bacteria.
- Mention knowledge about PPE
- Demonstrate basic knowledge of immunity.

List of Competencies:

1. demonstrate basic knowledge on common microbiological and parasitological issues.
2. perform identification of different microorganisms particularly bacteria & fungus of medical importance ensuring laboratory safety using microbiological, reagents, equipment and apparatus.
3. provide best services to the stakeholders using the knowledge and skills.

Course Contents of Basic Microbiology & Parasitology

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture / Tutorial on Theories	Practical/ Demonstration/Field visit
1.	Introduction to microorganisms: <ul style="list-style-type: none"> ▪ Definition and classification of microorganisms ▪ Microbiological terminology ▪ Characteristics of Eukaryotic prokaryotic & sub cellular groups of microorganisms ▪ Microbiological articles, equipment's apparatus ▪ Microscope: Different parts of microscope, & maintenance of microscope 	08	03
2.	Destruction of microorganism: <ul style="list-style-type: none"> ▪ Cleaning, Washing, decontamination disinfection & procedures ▪ Sterilization of different laboratory articles, instruments, glass wares etc. 	07	03
3.	Bacteria: <ul style="list-style-type: none"> ▪ Anatomy of Bacteria, chemical composition of different structures of bacteria ▪ Bacterial Spore: Definition & function spores, Spores bearing bacteria of medical importance ▪ Bacterial toxin: Definition & types of bacterial toxin, characteristics of endotoxin & exotoxin, Toxin producing organism of medical importance, use of bacterial toxins in diseases prevention ▪ Biology of bacteria: Growth & multiplication of bacteria, bacteria growth curve, bacteria growth requirements. Definition & classification of culture media ▪ Classifying bacteria in terms of morphology, staining, spore, flagella, capsule & Pathogenicity. ▪ Staining bacteria: Gram's staining, AFB staining, Albert staining 	15	04
	Virus: <ul style="list-style-type: none"> ▪ General characters of virus ▪ Morphology & classification of virus ▪ List of viruses of medical importance & diseases produced by them 	10	01

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture / Tutorial on Theories	Practical/ Demonstration/Field visit
	Fungus: <ul style="list-style-type: none"> ▪ General character, Morphology and classification of fungus ▪ List of fungus list medical important and the diseases produced by them 	10	02
	Parasite: <ul style="list-style-type: none"> ▪ Definition /Classification of parasite 	03	01
	Helminth: <ul style="list-style-type: none"> ▪ General characteristics of helminths ▪ Classification /Morphology of helminths 	08	02
	Protozoa: <ul style="list-style-type: none"> ▪ General characteristics of protozoa ▪ Definition /Classification of protozoa 	10	02
	PPE: <i>Personal protective equipment (PPE)</i> for different healthcare activities	04	01
	Immunity: Basic Concept of immunity and immunization Schedule.	05	01
	Total	80	20

Teaching Methods:

- Lecture
- Tutorial
- Practical/ Demonstration
- Field visit

Media:

- Multimedia and Laptop
- OHP and transparencies
- White Board and markers
- Blackboards and chalk
- Online and computer based teaching learning materials
- Laboratory: (Microscope, Autoclave, Hot Air Oven, Incubator, Haemocytometer, Haemoglobin meter, Analytical balance, Centrifuge machine, Rotator, Refrigerator, Photometer, Electrolyte analyzer, Electrophoresis apparatus, ELISA reader, PCR machine, Cell counter etc.)
- Hospital/ Health complex

Assessment:

Written – SAQ= 80 marks, MCQ=20 marks

Practical or OSPE 40 marks, Oral-40 marks, formative-20 marks

Paper IV: Environmental and Occupational Health

Paper Title	Paper		Year
	Number	Part	
Environmental Health	II	Title	No.
		Environmental & Occupational Health	A
		Public Health Engineering	B
			2 nd

Part	Title	Teaching Methods And Hours				Total
		Lecture	Tutorial	Practical	Field visit	
A	Environmental and Occupational Health	70	54	18	24	166
B	Public Health Engineering	30	30	08	16	84
Total		100	84	26	40	250

Assessment Methods					
Assessment Type	Written	Oral	Practical	Assignment/Formative	Total
Marks	100	40	40	20	200

Part A: Environmental and Occupational Health

Course Objectives

At the end of the course, the students will be able to-

- a. Define terms related to environmental and occupational health
- b. Describe sources of water, air and noise pollution and their preventive measures
- c. Enumerate the methods of waste disposal and sanitary measures for camp, fair and during disaster,
- d. Mention criteria of healthful housing
- e. Narrate common occupational hazards and diseases, OSH measures in law, health problems of agricultural workers,

List Of Competencies

- Assessment of physical quality of water
- Performance of water examination by field kit for arsenic, iron, fluoride, salinity
- Physical assessment of sources of pollution of ambient air and indoor air
- Measurement of sound level
- Organizing and providing advice for proper waste collection, transportation and disposal
- Assessment of occupational hazards using inspection format /checklist
- Measurement of BOC/COD measurement in industrial effluent by field kit
- Organizing and providing advice for proper technique of use of pesticides
- Suggest water purification on small scale and large scale
- Perform disinfection of aircraft, ships and cargoes
- Detect occupational hazards
- Suggest correction measures to remove occupational hazards.

Part A: Environmental and Occupational Health

ENVIRONMENTAL HEALTH					
Learning Objectives	Contents	Teaching Method	Teaching Aids	Teaching Hours	Assessment
<i>At the end of the session, students will be able to</i>					
<ul style="list-style-type: none"> • Define Environment and environmental Health • Define pollution and pollutant • Classify pollutant, • List common diseases due to pollution 	Introduction to environmental health Definition of environment Classification of environment Role of environmental in the causation of disease Definition of pollution and pollutant, Pollutant in different Environmental medias, Diseases due to environmental pollution	Lecture Tutorial	White board, Markers, Multimedia Projector	L-8 T-4	Written Oral
<ul style="list-style-type: none"> • Define safe water and water pollution, • Classify water pollution • Illustrate the sources of water • List common water and chemical borne diseases • Assess physical quality of water • Perform water examination for arsenic iron, fluoride and salinity • Follow Standard Operating 	Define safe water and contaminated water. Sources of water, Sources of water pollution, Classification of water pollution, Chemical pollutant- Arsenic, Fluoride, Iron Salinity Diseases due to water pollution- Chemical and Biological borne Quality of Water- Physical,	Lecture Tutorial Practical Field Visit	White board, Markers, Multimedia Projector, Models Field Test Kits	L-10 T-12 P-10 FV-8	Written Oral Practical Assignment

<p>Procedure (SOP) for water sample collection</p> <ul style="list-style-type: none"> • Advice for proper boiling and maintenance of domestic water filter • Perform proper chlorination • Identify arsenicosis patient 	<p>Chemical and Biological water quality Water purification-Drinking water Boiling, Domestic Filter, Disinfection of water-Reservoir chlorination, Arsenic Contamination in water, Identification arsenicosis patient using Algorithm</p>				
<ul style="list-style-type: none"> • Define air pollution • Enumerate the sources of air pollution. • Illustrate air pollutant from brick field, motor vehicle, industrial pollution, • List diseases due to air pollution, • Organize preventive measures against air pollution • Explain indoor pollution • Enumerate the sources of indoor pollution in rural and urban area • List the diseases due to indoor pollutant • Illustrate the pollution due to biomass fuel • Explain and organize smokeless cooking or 	<p>Composition of air, Define air pollution, air pollutant, sources of air pollution, air pollution in brick field, motor vehicle, industrial emission Diseases due to air pollution, Prevention of air pollution Define indoor pollution, Sources of indoor pollution in rural and urban area, Health effects due to indoor pollutant Smokeless cooking, Cooking with improved stove Biomass fuel, Pollution due bio-mass fuel</p>	<p>Lecture Tutorial Practical</p>	<p>White board, Markers, Multimedia Projector Models</p>	<p>L-08 T-04 P-04</p>	<p>Written Oral Practical</p>

cooking with improved stove,					
<ul style="list-style-type: none"> • Define solid wastes; • Recognize different type of wastes including hazardous wastes. • Illustrate different color coding for collection of wastes • State the methods for final disposal of different type of wastes. • Organize recycle, reuse and reutilization of wastes • Advice for Personal Protective Equipment (PPE) use and maintenance of personal hygiene • Explain environmental pollution due to poor disposal of wastes 	<p>Define solid waste, types of solid waste, Properties of hazardous waste, Composition of hospital waste, Management of wastes- color coding of waste, collection of waste, transportation of waste, final disposal of wastes. Use of PPE and maintenance of Personal hygiene, Recycle, reuse and recover of wastes; Environmental pollution due unsanitary waste disposal, Health effects due to poor management of wastes</p>	<p>Lecture Tutorial Field Visit</p>	<p>White board, Markers, Multimedia Projector</p>	<p>L-6 T-4 FV-4</p>	<p>Written Oral Assignment</p>
<ul style="list-style-type: none"> • Define environmental sanitation. • Explain sanitation barrier, • List the merits and demerits of water seal latrine • Organize proper sanitary measures during fair and festivals • Organize and advice for 	<p>Environmental sanitation, sanitation barrier, Rural sanitation-water seal latrine, bore hole latrine trench latrine, Sanitation of public places- site selection, organization of camps, festival and fairs, safe water supply, proper excreta disposal, proper waste collection, transportation and disposal, food and Cooking arrangement,</p>	<p>Lecture Tutorial Field Visit</p>	<p>White board, Markers, Multimedia Projector Model</p>	<p>L-8 T-4 FV-8</p>	<p>Written Oral Assignment</p>

<p>proper collection, transportation and disposal of wastes from market place, hospital</p> <ul style="list-style-type: none"> • Perform proper disinfection in air-craft and ship and cargo • Organize quarantine for suspected healthy person • Organize safe water supply, waste disposal and excreta disposal in Disaster 	<p>Market Place- Proper waste collection, transportation, Excreta disposal, cleaning, safe water supply</p> <p>Hospital- collection of wastes, wastes segregation by using color code, proper transportation of wastes</p> <p>Air port and Sea port safe water supply, wastes collection and transportation, cleaning, quarantine, disinfection of air craft and de- ratification of cargo.</p> <p>Water supply, waste disposal and excreta disposal in disaster</p>				
<ul style="list-style-type: none"> • Define noise • List sources of noise population • Illustrate the auditory and non-auditory effects of noise • Aware people on effects of noise • Measure sound level 	<p>Noise pollution, Sources of Noise Health effects of noise pollution, Assessment of noise pollution</p>	<p>Lecture Tutorial Practical</p>	<p>White board, Markers, Multimedia Projector Sound Level Meter</p>	<p>L-4 T-4 P-2</p>	<p>Written Oral Practical</p>

Occupational Health

Learning Objectives	Contents	Teaching Method	Teaching Aids	Teaching hours	Assessment
<p><i>At the end of the session, students will be able to-</i></p> <ul style="list-style-type: none"> • Define occupational Health • Explain occupational safety and Health • List components of occupational hygiene 	<p>Definition of Occupational Health, Occupational Safety & Health (OSH), Occupational Hygiene, Components of Occupational Hygiene, Criteria for Good work environment</p>	<p>Lecture Tutorial Field Visit</p>	<p>White board, Markers, Multimedia Projector</p>	<p>L-4 T-4 FV-04</p>	<p>Written Oral Assignment</p>

<ul style="list-style-type: none"> • Illustrate the criteria for good work environment 					
<ul style="list-style-type: none"> • Narrate occupational safety and health situation in Bangladesh • Illustrate the Occupational notifiable diseases and diseases under work men compensation • Illustrate the accident and injury in the laws 	<p>Introduction to OSH in Bangladesh. OSH situation in Bangladesh- Factory Inspectorate, Medical care, Recording and Reporting of Occupational Diseases Occupational Notifiable Diseases, Workmen Compensation, Health and Hygiene. Accident and Injury</p>	<p>Lecture Tutorial Field Visit</p>	<p>White board, Markers, Multimedia Projector</p>	<p>L-06 T-04 FV-04</p>	<p>Written Oral Assignment</p>
<ul style="list-style-type: none"> • Define hazard, exposure and risk • Explain occupational Hazards • Suggest and advice to prevent and control of occupational hazards • Identify hazardous industry and offensive trade • Select appropriate PPE 	<p>Definition of hazard Occupational hazards Types of occupational hHazards, Prevention and control of occupational hazards, Hazardous industry Offensive trade PPE and Personal Protective Device (PPD)</p>	<p>Lecture Tutorial Practical Field Visit</p>	<p>White board, Markers, Multimedia Projector Models of PPE</p>	<p>L-04 T-04 P-01 FV-04</p>	<p>Written Oral Practical Assignment</p>
<ul style="list-style-type: none"> • Define occupational disease • List occupational diseases in different occupation 	<p>Define occupational diseases and work related diseases, Common occupational diseases due to Physical, Chemical, Biological, Mechanical, Psycho-somatic and Ergonomic Hazard Occupational diseases in different</p>	<p>Lecture Tutorial</p>	<p>White board, Markers, Multimedia Projector</p>	<p>L-06 T-04 FV-08</p>	<p>Written Oral Assignment</p>

	Industries				
<ul style="list-style-type: none"> • Identify different type of industrial wastes • Advice and suggest how to dispose different type of industrial wastes • Measure Biological Oxygen Demand(BOD)/Chemical Oxygen Demand(COD) in industrial effluent 	<p>Types of different industrial wastes. Management of industrial wastes. Industrial Effluent, Effluent Treatment Plan (ETP), Measurement of BOD/COD in Effluent</p>	<p>Lecture Tutorial Practical Field visit</p>	<p>White board, Markers, Multimedia BOD/COD Field kit</p>	<p>L-02 T-02 P-01 FV-08</p>	<p>Written Oral Practical Assignment</p>
<ul style="list-style-type: none"> • Identify common health problems among agricultural workers • Explain proper use of insecticides and pesticides • Organize IPM • Organize preventive measures against Bird flu, anthrax etc. 	<p>Health Problems of Agricultural worker, Use of insecticides and Pesticides, Organic fertilizer Integrated Pest Management (IPM) Prevention of exposure to insecticide and pesticides Preventive measures against Bird flu, Anthrax etc.</p>	<p>Lecture Tutorial Field visit</p>	<p>White board, Markers, Multimedia Projector</p>	<p>L-04 T-04 FV-04</p>	<p>Written Oral Assignment</p>

Part B: Public Health Engineering

COURSE OBJECTIVES

At the end of the course the students will be able to -

- a. Develop the knowledge and acquire skills on safe water supply and sanitation technology
- b. Develop the knowledge and acquire skills on water safety plan and sanitary inspection survey
- c. Develop the knowledge and acquire skills on sanitation option in emergency

LIST OF COMPETENCIES

- Sketch and drawing of different water and sanitation options including area map
- Assist for selecting the site for different water option for installation, operation, protection and maintenance of different water option including pipe network
- Explain the process of construction, operation and maintenance of different type of sanitary latrine and management of solid waste including health care waste
- Assist to develop and implement Water Safety Plan and carry out the sanitary inspection survey
- Assist for Safe Water Supply and Sanitation Option during emergency, such as, flood, cyclone
- Interpret the test results of water quality comparing Bangladesh standard
- Suggest construction of different types of sanitary latrines.

PART B: PUBLIC HEALTH ENGINEERING

Objectives <i>At the end of the session, the students will be able to-</i>	Contents	Teaching Methods	Teaching Aids	Teaching Hours	Assessment
Define terms related to Public Health Engineering	Definition of Hydrological cycle, Water source, Treatment, Distribution, Plumbing, Latrine, Sewer, Pump, Pipes, Solid waste	Lecture Tutorial	Multimedia White board Flip Chart	L-02 T-2	Written Oral
Narrate concept of different safe water options including arsenic mitigation	Objectives of water supply, Tubewells, Pond Sand Filter, dug well, rain water harvesting, arsenic removal technologies	Lecture Tutorial Field visit	Multimedia White board Flip Chart	L-03 T-4 FV-4	Written Oral Assignment
Describe different sanitation technologies and solid waste management	Objective/concept of sanitation, simple pit latrine, off site pit, ventilation improved latrine, septic tank, small borne sewer, water borne sewer, collection and disposal of solid waste , construction and inspection of sewerage	Lecture Tutorial Field visit	Multimedia White board Flip Chart	L-05 T-6 FV-8	Written Oral Assignment
Perform the drawing of different water and sanitation option including area map	Different types of water and sanitation option, area of study. Drawing and its interpretation of food establishments including food industries, markets and other public places of public health particularly food and water safety importance.	Lecture Tutorial Practical Field visit	Multimedia White board Flip Chart	L-05 T-04 P-03 FV-08	Written Oral Practical Assignment
Provide advice for selecting site for different water options for installation, operation, protection and maintenance including pipe network	Site selection criteria, feasibility of different options, Operation and Management (O&M) of different water points, leakage control of pipe line	Lecture Tutorial Field visit	Multimedia White board Flip Chart	L-03 T-04 FV-04	Written Oral Assignment

Objectives <i>At the end of the session, the students will be able to-</i>	Contents	Teaching Methods	Teaching Aids	Teaching Hours	Assessment
Provide advice for construction, operation and maintenance of different types of sanitary latrine and management of solid waste including health care wastes	O&M issues related to sanitation system, construction of latrine & hygienic maintenance of different types of latrine, O&M of solid waste collection and disposal system, incineration, land disposal, refuse disposal, manure pit, sanitary land filling, ditches, burial pit and dumping ditches	Lecture Tutorial Field visit	Multimedia/ White board/ Flip Chart	L-03 T-4 FV-4	Written Oral Assignment
Assist to develop and implement Water Safety Plan and carry out sanitary inspection survey	System assessment, risk assessment, control measure, operational monitoring, surveillance and sanitary inspection survey	Lecture Tutorial Field visit	Multimedia/ White board/ Flip Chart	L-03 T-4 FV-4	Written Oral Assignment
Provide advice for safe water supply and sanitation option during emergency, such as, flood, cyclone etc.	Emergency preparedness in terms of WATSAN, Raising of tubewell, dugwell, disinfection of wells, household treatment, trench latrine and raised latrine	Lecture Practical Field visit	Multimedia/ White board/ Flip Chart	L-03 P-4 FV-4	Written Oral Assignment
Interpret the test result of water safety quality	Physical, microbiological and chemical (hardness, arsenic, manganese, salinity) quality of water	Lecture Tutorial Practical Field visit	Multimedia/ White board/ Flip Chart	L-03a T-2 P-1 FV-4	Written Oral Assignment

Paper – V: Epidemiology

Part	Title	Teaching Methods And Hours				
		Lecture	Tutorial	Practical	Field visit	Total
A	Epidemiology	60	64	22	56	202
B	Medical Entomology	40	30	28	24	122
Total		100	94	50	80	324

Assessment Methods					
Assessment Type	Written	Oral	Practical	Assignment/Formative	Total
Marks	100	40	40	20	200

Part A: Epidemiology

Course Objectives

At the end of the course, the students will be able to-

- a. Acquire knowledge on basic epidemiology and epidemiology of diseases
- b. Develop skills on epidemiological studies on health events.
- c. Apply knowledge and skills regarding epidemiology with a positive attitude when required

List Of Competencies

- Performing the calculation of epidemiological measurements
- Investigate epidemic
- Suggest control measure of epidemic
- Organize quarantine
- Conduction of surveillance and screening
- Prevention and control of disease

Part - A: Epidemiology

Principles of Epidemiology

Learning Objectives <i>At the end of the session, the students will be able to-</i>	Contents	Teaching Methods	Teaching Aids	Teaching Hours	Assessment
Define concept of epidemiology	Concept of Epidemiology: History , Evolution , Definition , Aims and Objectives , scope, uses of epidemiology , difference between epidemiology and clinical medicine	Lecture Tutorial	Multimedia projector, OHP, White boards and markers, Handouts	L-4 T-4	Written Oral
Define important terms in epidemiology	Important terms used in Epidemiology: Epidemic, endemic, pandemic, sporadic, zoonotic, epizootic, nosocomial, infection, infestation, contamination, pollution, incubation period, generation time, latent period, period of communicability, case, carrier, prevention, control, intervention, elimination, eradication,	Lecture Tutorial	Multimedia projector, OHP, White boards and markers, Handouts	L-4 T-6	Written Oral
Describe basic concept of epidemiological methods	Epidemiological methods: <u>An over view of</u> - Descriptive study: Cross sectional study - Analytical study: Case control/ Cohort studies - Experimental study: Randomized controlled trial, Non-randomized trial, Non-experimental trials	Lecture Tutorial	Multimedia projector, OHP, White boards , markers, Handouts etc	L-2 T-4	Written Oral

<ul style="list-style-type: none"> Describe basic concept of epidemiological measurements Perform calculation of epidemiological measurements 	<p>Epidemiological measurements:</p> <ul style="list-style-type: none"> Basic tools used in epidemiology Measurements of disease frequency Morbidity rates and ratios: Incidence rate, , attack rate, secondary attack rate, prevalence rate, relationship between incidence and prevalence rate , factors influencing prevalence rate Mortality rates- Crude death rate, Cause Specific Death Rate, Maternal Mortality Rate, Case Fatality Rate, Infant Mortality Rate Measurement of Risk- Relative Risk, Attributable Risk, Odds Ratio 	<p>Lecture Tutorial Practical</p>	<p>Multimedia projector, OHP, White boards and markers, Handouts</p>	<p>L-2 T-4 P-16</p>	<p>Written Oral Practical</p>
<p>Describe and investigate epidemic outbreak of diseases</p>	<p>Investigation of epidemic/outbreak: Aims, objective, importance, preparedness, criteria of epidemic prone disease, trigger events/steps in epidemic investigation, prevention and control of outbreak</p>	<p>Lecture Tutorial Practical Field visit</p>	<p>Multimedia projector, OHP, White boards and markers, Handouts</p>	<p>L-4 T-4 P-4 FV-08</p>	<p>Written Oral Assignment Practical</p>
<p>Describe and perform surveillance of diseases of epidemic importance</p>	<p>Surveillance of epidemic prone diseases: Definition, objectives, importance, functional elements & steps of surveillance, prioritization of diseases for surveillance, diseases under international surveillance, disease under surveillance in Bangladesh, prerequisites for effective surveillance.</p>	<p>Lecture Tutorial Field visit</p>	<p>Multimedia projector, OHP, White boards and markers, Handouts</p>	<p>L-4 T-6 FV-08</p>	<p>Written Oral Assignment</p>
<p>Define basic concept of Screening of disease</p>	<p>Screening of disease:</p> <ul style="list-style-type: none"> Definition, types, objectives, elements, uses, criteria tools: sensitivity & specificity, reliability and validity. 	<p>Lecture Tutorial</p>	<p>Multimedia projector, OHP, White boards and markers , Handouts Posters , Charts</p>	<p>L-3 T-4</p>	<p>Written Oral</p>

Explain the basic concept of prevention and control of communicable diseases	<p><i>Prevention and control of communicable diseases:</i></p> <ul style="list-style-type: none"> - Concept of natural history of disease-prepathogenesis and pathogenesis phases. - Definition and characteristics of communicable disease. - Chain of infection- Source & reservoir of infection, mode of transmission, susceptible host. <p>General principles for prevention & control-Reservoir control, blocking routes of transmission, increasing host resistance</p> <p>-</p>	Lecture Tutorial Field visit	Multimedia projector, OHP, White boards and markers ,Handouts Posters , Charts	L-8 T-8 FV-8	Written Oral Assignment
Explain the concept of prevention and control of non-communicable diseases:	<p><i>Prevention and control of non-communicable diseases:</i></p> <p>Definition and characteristics of non-communicable diseases, definition & identification of risk factors and risk groups, prevention & control of non-communicable diseases</p>	Lecture Tutorial Field visit	Multimedia projector, OHP, White boards and markers, Handouts Posters , Charts	L-04 T-04 FV-08	Written Oral Assignment
Explain the basic concept of water and foodborne diseases	<p>Water and foodborne diseases:</p> <p>Typhoid, Diarrhoeal Diseases including cholera and dysentery, Poliomyelitis, Hepatitis-A, E</p>	Lecture Tutorial	Multimedia projector, OHP, White boards and markers, Handouts	L-5 T-4	Written Oral
Explain the basic concept of airborne diseases	<p>Airborne diseases:</p> <p>Tuberculosis, Diphtheria, Whooping cough, Chicken pox, Mumps, Measles</p>	Lecture Tutorial Field visit	Multimedia projector, OHP, White boards and markers, Handouts	L-4 T-4 FV-08	Written Oral Assignment

			posters , charts		
Explain the basic concept of sexually transmitted diseases	<i>Sexually transmitted diseases:</i> HIV/AIDS, Gonorrhoea , Syphilis, Hepatitis – B,C	Lecture Tutorial Field visit	Multimedia Projector, OHP, White Boards and markers, Handouts posters , charts	L-2 T-2 FV-08	Written Oral Assignment
Describe the basic concept of <i>helminthic diseases</i>	<i>Helminthic diseases:</i> Ascariasis, Ankylostomiasis, Enterobiasis, Trichuriasis, Taeniasis	Lecture Tutorial Practical	Multimedia projector, OHP, White boards and markers, Handouts, Models , posters , charts	L-4 T-2 P-2	Written Oral
Narrate the basic concept of <i>soilborne diseases</i>	<i>Soilborne diseases:</i> Tetanus, Gas gangrene, Ankylostomiasis	Lecture Tutorial	Multimedia Projector, OHP, White boards and markers, Handouts	L-2 T-2	Written Oral
Enumerate the basic concept of <i>zoonotic diseases</i>	<i>Zoonotic diseases:</i> Rabies, Plague, Anthrax, Swine flu, Avian influenza (Bird Flu), Nipah, Chikongunia	Lecture Tutorial	Multimedia projector, OHP, White boards and markers, Handouts	L-2 T-2	Written Oral
Explain the basic concept of non communicable diseases	<i>Non-communicable diseases</i> Hypertension, Cancer, Diabetes, Bronchial asthma, Mental disorders, Accident , Beriberi, Xerophthalmia, Pellagra, Scurvy, Rickets, Anaemia, and other nutritional disorders	Lecture Tutorial Field visit	Multimedia projector, OHP, White boards and markers , Handouts Models , Posters , Charts	L-6 T-4 FV-08	Written Oral Assignment

Part - B: Medical Entomology

Course Objectives

At the end of the course, the students will be able to

- a. Illustrate the basic concepts of medical entomology
- b. Enumerate the insects and arachnids of medical importance
- c. Describe vector borne diseases in Bangladesh
- d. Identify vectors in Bangladesh
- e. Narrate vector biology, bionomic and ecology
- f. Describe vector control methods and integrated vector management (IVM)
- g. Provide health education for community participation in vector control
- h. Handle the entomological equipment practically
- i. Describe insecticides, their formulation and safe use
- j. Detect susceptibility, acquired resistance of arthropods to insecticides
- k. Perform bioassay tests
- l. Acquire skills on entomological surveillance
- m. Collect, record, compile and report entomological data

List Of Competencies

- Identification of arthropods that transmit diseases (vectors) in Bangladesh
- Demonstration of breeding sites, resting places and feeding behavior of vectors
- Participation in the vectors control activities to prevent vector borne diseases
- Provide health education to the community for their participation in vector control
- Taking safety measures during insecticide use
- Performing susceptibility, resistance and bioassay tests
- Collection of insects in the field and transport to laboratory
- Processing, mounting and preserving field specimens
- Incrimination of vectors by dissection or PCR
- Collection, recording, compilation and reporting of entomological data

Part: B = Medical Entomology

Learning Objectives <i>At the end of the course, the students will be able to</i>	Contents	Teaching Methods	Teaching Aids	Teaching Hours	Assessment
Explain the basic concept of medical entomology	<ul style="list-style-type: none"> - Introduction to medical entomology - Importance of medical entomology in the field of Public Health - Responsibility of sanitary inspector in Medical entomology 	Lecture Tutorial	Multimedia projector, OHP, White boards and markers, Handouts	L-03 T-03	Written Oral
Describe the basic concept of arthropods and entomological Terms	<ul style="list-style-type: none"> - Introduction to Arthropod and its classification - Entomological terms 	Lecture Tutorial	Multimedia projector, OHP, White boards and markers, Handouts	L-03 T-03	Written Oral
Enumerate the basic concept of medically important arthropods, diseases and mode of disease transmission	<ul style="list-style-type: none"> - List of medically important Arthropods - Arthropod borne diseases - Mode of disease transmission by Arthropods 	Lecture Tutorial	Multimedia projector, OHP, White boards and markers, Handouts Models , posters	L-03 T-03	Written Oral
Narrate the basic concept of biology and ecology of insects Identify breeding sites and resting places of vectors	<ul style="list-style-type: none"> - Biology and bionomics of insects - Ecology: Relation of insects with the environment (climate, topography, water, soil condition) 	Lecture Tutorial Field visit	Multimedia projector, OHP, White boards and markers, Handouts	L-03 T-03 FV-08	Written Oral
Explain the basic concept of vector control Demonstrate the entomological equipment	<ul style="list-style-type: none"> - Vector control: Principle, Methods, Integrated Vector Management (IVM) - Entomological equipments 	Lecture Tutorial Practical	Multimedia pProjector, OHP, White boards and markers, Handouts Entomological equipments	L-04 T-03 P-02	Written Oral Practical
Explain the basic concept of vector borne diseases	Vector borne diseases in Bangladesh: Malaria, Kala-azar, Filariasis, Dengue, Chikungunya, Enteric diseases	Lecture Tutorial	Multimedia projector, OHP, White board and markers, Handouts	L-06 T-03	Written Oral

<p>Explain the basic concept of morphology, life cycle and control of arthropods</p> <p>Demonstrate external morphology of insects for identification</p>	<p>Morphology, life cycle and control: Insects- Mosquitoes, House flies, Sand flies, Cockroaches, Bed bugs, Lice Arachnids- Scabies mites</p>	<p>Lecture Tutorial Practical</p>	<p>Multimedia projector, OHP, White boards and markers, Handouts Models and posters Stereoscopy Microscope, Samples</p>	<p>L-08 T-04 P-10</p>	<p>Written Oral Practical</p>
<p>Explain the basic concept of Entomological surveillance</p> <p>Perform entomological techniques</p>	<p>Entomological surveillance: Collection (adult and larvae), transportation, preservation and mounting, dissection/ vector incrimination, age determination (parity status)</p>	<p>Lecture Tutorial Practical Field visit</p>	<p>Multimedia projector, OHP, White boards and markers, Handouts, Samples, Stereoscopy Microscopes, Equipments</p>	<p>L-06 T-04 P-08 FV-08</p>	<p>Written Oral Practical</p>
<p>Explain the basic concept of insecticides</p> <p>Perform entomological tests</p>	<p>Insecticides: Selection, classification, formulation, resistance, toxicity, safety precaution</p>	<p>Lecture Tutorial Practical</p>	<p>Multimedia Projector, OHP, White boards and markers, Handouts Insecticides, Samples, Test kits</p>	<p>L-02 T-02 P-04</p>	<p>Written Oral Practical</p>
<p>Explain the basic concept of recording and reporting of entomological data</p> <p>Collect, compile record and report entomological data</p>	<p>Entomological Data: Recording and reporting of entomological data</p>	<p>Lecture Tutorial Practical</p>	<p>Multimedia projector, OHP, White boards and markers, Handouts Entomological forms</p>	<p>L-02 T-02 P-04</p>	<p>Written Oral Practical</p>

3rd Year

Paper – I: Public Health

Paper Title	Paper		Year
	Number	Part	
PUBLIC HEALTH	III	Title	No.
		Public Health	A
		Health Promotion and Health Education	B
			3 rd

Part	Title	TEACHING METHODS AND HOURS				Total
		Lectures	Tutorials	Practical	Field visits	
A	Public Health	40	24	12	24	100
B	Health Promotion and Health Education	60	40	18	32	150
Total		100	64	30	56	250

Assessment Methods					
Assessment Type	Written	Oral	Practical	Assignment/Formative	Total
Marks	100	40	40	20	200

Paper I: Part A: Public Health

COURSE OBJECTIVES

At the end of the course, the students will be able to-

- a. Define Public health, Hygiene, Personal hygiene, food and nutrition
- b. Enumerate healthy educational institutes
- c. Mention the scope and importance Public Health, Hygiene ,Personal Hygiene, Hygiene of the educational institutes
- d. Assess nutritional status and interpret growth chart
- e. Describe nutritional disorders and its prevention and control
- f. Enumerate health care service and health organizations.

LIST OF COMPETENCIES

- Conduct inspection of Educational Institutes
- Detect hazardous environment of educational institutes
- Suggest corrective measures of faulty sitting arrangement for the students
- Identify risk factors for the students and teachers in the institutes
- Assess nutritional status and interpret growth chart
- Detect unhygienic conditions of classroom
- Suggest to prepare balance diet for different categories of people

Learning Objectives <i>At the end of the session, the students will be able to</i>	Contents	Teaching Methods	Teaching Aids	Teaching Hours	Assessment
Define Public Health and mention its components	<u>Public Health:</u> Concept, Definition and Component of Public Health	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L-2 T-2	Written Oral
Define hygiene and mention its role in health and disease and the role of sanitary inspectors	<u>Hygiene:</u> Concept, definition, component Role of hygiene in health and disease Role of sanitary inspectors in the promotion of hygiene	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L-04 T-2	Written Oral
Explain Personal Hygiene and mention its components and importance	<u>Personal hygiene:</u> ➤ Definition, scope & components of personal hygiene (Essentials of healthful living/ health habits) ➤ Importance of personal hygiene in health and diseases	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts, posters, charts,	L-4 T-4	Written Oral
Enumerate Hygiene of the educational institutes and mention the Criteria of healthful environment of educational institutes	<u>Hygiene of educational institutes:</u> ➤ Introduction, importance, objectives & components ➤ Healthy environment of institutes (classroom, playground, recreational facilities, seats and desk, sanitary convenience and water supply) ➤ Criteria of healthy environment of educational institutes ➤ Inspection of institute premises and its basic sanitation and maintenance Major health problems (common health problems, early case detection and preventive measures)	Lecture Tutorial Field visits	Multimedia Projector, OHP, White Boards and markers, Handouts Models, posters, charts	L-8 T-06 FV-8	Written Oral Assignment
Define food and nutrition, types, sources, daily requirements,	<u>Food and Nutrition</u> Definition, function, classification and sources of	Lecture Tutorial Practical	Multimedia Projector, OHP, White Boards and markers, Handouts	L-16	Written Oral Exam Practical

<p>deficiency signs , prevention, balance diet , BMR ,PEM, Common nutritional problems and Ongoing Nutritional Programs of Bangladesh</p>	<p>food. Composition of major food items</p> <p>Definition of diet, Nutrients; Types of Nutrients, Recommended Dietary Allowance (RDA), RDA of different nutrients, BMR, Balance diet</p> <p>Definition nutrition and malnutrition</p> <p>Assessment of nutritional status, Growth charts, interpretation of growth charts</p> <p>Different types of nutritional disorders and its causes</p> <p>Classification of Protein Energy Malnutrition (PEM), Difference between Kwashiorkar and Marasmus</p> <p>Micronutrients and micronutrient deficiencies</p> <p>Common nutritional disorders in Bangladesh</p> <p>Ongoing nutritional programmes in Bangladesh</p>	<p>Field visits</p>	<p>Models , posters , charts</p>	<p>T-06</p> <p>P-12</p> <p>FV-8</p>	<p>Assignment</p>
<p>Explain Health care services and Health organizations</p>	<p><u>Health care services and Health organizations</u></p> <p>Levels of Health Care Services- Primary , Secondary, Tertiary, Community Clinic</p> <p>ICDDR,B , Bangladesh Diabetic Society (BIRDEM), WHO , UNICEF , FAO , International Red Crescent Society etc.</p>	<p>Lecture Tutorial Field Visit</p>	<p>Multimedia Projector, OHP, White Boards and markers, Handouts Models , posters , charts</p>	<p>L-6 T-4 FV-16</p>	<p>Written Oral Assignment</p>

Part B: Health Promotion and Health Education

COURSE OBJECTIVES

At the end of the course, the students will be able to-

- a. Describe basic concept of health education
- b. List the methods and media in health education
- c. Narrate the ongoing health education programmes in Bangladesh
- d. Enumerate the basic concept of communication
- e. Explain the basic concept of medical sociology
- f. Describe the behavioral factors and health
- g. Demonstrate ethical dealings with good communication skills

LIST OF COMPETENCIES

- Demonstration of effective communication skills
- Planning, design and preparation of different health promotion materials
- Demonstration of ethical behavior
- Perform health education for different target groups
- Prepare communication materials of health education
- Motivate people to adopt healthy life-styles

Learning Objectives: At the end of the session, the student will be able to-	Contents	Teaching Methods	Teaching Aids	Teaching Hours	Assessment
<ul style="list-style-type: none"> Explain the basic concepts of health promotion and health education Enumerate media used in health education. 	<p><u>Basic concept of health education:</u></p> <ul style="list-style-type: none"> ➤ Definition and components health promotion ➤ Definition, components, objectives, contents, principles of health education <p>Importance of health education in health and disease</p>	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L -4 T- 4	Written Oral
<ul style="list-style-type: none"> Enumerate the different methods and media of health education. Design health education programme and use of audio-visual aids in different health programmes. 	<p><u>Methods and media of health education :</u></p> <ul style="list-style-type: none"> ➤ Methods used in health education (lecture, demonstration, panel and group discussion, programmed instructions, brainstorming, case studies, role plays, simulation, games, talks, proverbs, fables, stories, display) ➤ Media used in health education - Definition and its classification: Traditional media, Modern media (visual, auditory, audio-visual) ➤ Role of mass media in health education <p>Preparation of media for health education</p>	Lecture Tutorial Practical	Multimedia Projector, OHP, White Boards and markers, Handouts	L – 16 T –08 P-10 FV-08	Written Oral Practical
Describe health education activities in Bangladesh.	<p><u>Health education programmes in Bangladesh:</u></p> <ul style="list-style-type: none"> ➤ Organizations of health education programmes in Bangladesh both public and private sectors ➤ Development of health education in Bangladesh ➤ Educational diagnosis and objective settings for designing health education programme <p>Target groups of health education in Bangladesh</p>	Lecture Tutorial Field visit	Multimedia Projector, OHP, White Boards and markers, Handouts	L -3 T -4 FV-8	Written Oral Assignment
Explain the basic concept of communication and its	<p><u>Basic concepts of communication:</u></p> <ul style="list-style-type: none"> ➤ Definition of communication ➤ Key elements of communication (communicator, 	Lecture Tutorial	Multimedia Projector,	L- 12 T -8	Written Oral

methods	<p>message, audience, channels)</p> <ul style="list-style-type: none"> ➤ Level of communication (interpersonal, group communication, cultural or mass communication) ➤ Communication methods (speech, panel, group discussion, symposium, colloquium, seminar, workshop, convention, committee, conference) ➤ Process, components, function & importance of communication ➤ Development of communication message ➤ Selection of appropriate channels ➤ Communication skill <p>Barriers of communication (physiological, psychological, environmental & cultural)</p> <ul style="list-style-type: none"> - Overcoming the communication barriers 	(Role play) Practical Field visit	OHP, White Boards and markers, Handouts	P-8 FV-8	Practical Assignment
Illustrate the concept of medical sociology and role of society in health and disease.	<p><u>Concept of medical sociology:</u></p> <ul style="list-style-type: none"> - Definitions of sociology, medical sociology, community, society, family & family health - Role of social organisation in implementing primary health care/ESP <p>Inspectors consumers relationship Relationship between sanitary inspectors and stakeholders in food safety and quality</p> <ol style="list-style-type: none"> 1. Social regulation in health and food and waterborne diseases 2. Family: Evaluation, types, functions; role of family in health and food and waterborne diseases 3. sociology & social structure of the food business community 4. Socio-cultural and economic factors in food safety and quality 	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts Hand-outs, Poster, Leaf-let	L -12 T- 8	Written Oral

	Relationship of public health programmes including food safety and quality and social welfare programmes				
Identify the behavioural factors associated with specific health problems.	<p><i>Behaviour and health :</i></p> <ul style="list-style-type: none"> ➤ Definition of behavioural sciences. ➤ Definition and classification of behaviour ➤ Development of normal human behaviour ➤ Classify abnormal behaviour ➤ Community beliefs regarding health, nutrition and and food and water borne diseases ➤ Role of behaviour in health and food and water borne diseases ➤ Behaviour related food safety and quality ➤ Definition and determinants of personality ➤ Role of customs, norms, traditions, habits, values in health , food and water borne diseases ➤ Illness behaviour (definition of illness behaviour in different societies- sick role/patient role) 	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L - 16 T – 08 FV- 08	Written Oral

Paper II: Biostatistics

PAPER TITLE	PAPER			YEAR
	Number	Part		
Biostatistics	IV	Title	No.	3 rd
		Biostatistics	A	
		Demography	B	

Part	Title	Teaching Methods And Hours				
		Lectures	Tutorials	Practical	Field visits	Total
A	Biostatistics	32	32	28	08	100
B	Demography	32	32	12	24	100
Total		64	64	40	32	200

Assessment Methods					
Assessment Type	Written	Oral	Practical	Assignment/Formative	Total
Marks	100	40	40	20	200

Part A: Biostatistics

Course Objectives

At the end of the course, the students will be able to-

- a. Define biostatistics , health statistics, medical statistics, vital statistics,
- b. Define common terminology in biostatistics
- c. Mention the scope and importance of biostatistics , health statistics, medical statistics, vital statistics etc
- d. Define morbidity, mortality statistics and survey
- e. Define sample and sampling

List Of Competencies

- Performance related to data collection and data presentation
- Calculation of common statistical measurements
- Coordination of the activities of census
- Calculation of morbidity and mortality statistics
- Conduction of survey on different health issues

Part A: Biostatistics

Learning Objectives <i>At the end of the session, the students will be able to-</i>	Contents	Teaching Methods	Teaching Aids	Teaching Hours	Assessment
Define Bio-statistics, Health statistics, Medical statistics & Vital statistics	<i>Concept of Bio-statistics:</i> Definition, scope, functions, importance & uses of biostatistics, health statistics, medical statistics & vital statistics	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L-03 T-03	Written Oral
Define data and mention its importance	<i>Collection of information (Data):</i> <ul style="list-style-type: none"> ➤ Definition, types, characteristics, functions & importance of data ➤ Sources of data (Census, registration of vital events, hospital records, health service records, epidemiological surveillance etc.) <ul style="list-style-type: none"> ➤ Methods of data collection (document review, observation, asking questions & experimentation) ➤ Process of data collection (preparation & pre-testing of instrument, training of data collectors, art of data collection) Preparation for data collection (proforma, questionnaire, interview schedule, check list)	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L-08 T-08 P-08	Written Oral

Define data presentation and mention its importance	<p><i>Management of data:</i></p> <ul style="list-style-type: none"> ➤ Cleaning and editing of data and master-sheet preparation ➤ Data presentation (tabular and graphic presentation) <ul style="list-style-type: none"> ➤ Tubular presentation (definition & type of table, general principles of designing table) ➤ Frequency tables (univariate , bivariate) ➤ Graphic presentations Bar/ Histogram / Frequency Polygon / Line chart / Pie / Pictogram /Scattered / Dot diagram / Cumulative frequency diagram ➤ Advantages and limitations of tables and graphs 	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L-02 T-02 P- 02 FV-08	Written Oral Assignment
Describe and calculate mean, median, mode and mention their importance and formula for calculation	<p><i>Measures of central tendency:</i></p> <ul style="list-style-type: none"> ➤ Definition & types (mean, median, mode) ➤ Calculation, importance and limitations of mean, median and mode 	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L-06 T-06 P-06	Written Oral
Narrate range and standard deviation and calculate using the formula	<p><i>Measures of dispersion:</i></p> <p>Definition, steps of calculation, importance & uses of range and standard deviation.</p>	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L-02 T-02 P-02	
Describe rates, Ratio, Proportions and	<p>Tools of measurement -</p> <ul style="list-style-type: none"> ➤ Rates- gross/specific/standardized 	Lecture Tutorial	Multimedia Projector,	L-02 T-02	

calculate using the formula	rates, Ratio, Proportions		OHP, White Boards and markers, Handouts	P-02	
Define and calculate the rates and ratios of morbidity and mortality	<ul style="list-style-type: none"> ➤ Definition of morbidity and mortality ➤ Morbidity rates and ratios (Incidence & cumulative incidence rates, attack & secondary attack rates, prevalence rate, hospital infection rate) ➤ Preparation of disease profile Mortality rate and ratios (CDR, Specific death rate for age, sex, IMR, MMR, CFR, NMR, PNMR, SBR, SDR & PMR)	Lecture Tutorial Practical	Multimedia Projector, OHP, White Boards and markers, Handouts	L-06 T-06 P-04	Written Oral Practical
Define survey with the types, characteristics and elements. Define sample and the terms related to sampling	<i>Survey on different health issues</i> <ul style="list-style-type: none"> ➤ Definition, types & characteristics of survey ➤ Elements of survey (objective setting, defining the population for survey) ➤ Sampling (definition of terms related to sampling, selection of sampling method & sample size, technique of sample selection, preparation of sampling frame) Collection, compilation, analysis of data and report writing	Lecture Tutorial Practical	Multimedia Projector, OHP, White Boards and markers, Handouts	L-03 T-03 P-4	Written Oral Practical

Part B: Demography

Course Objectives

At the end of the course, the students will be able to-

- a. Define demography , demographic cycle, population estimation
- b. Describe population trends with its calculationn**
- c. Mention stages , sources , elements of demography
- d. Describe demographic cycle**

List of Competencies

- Calculation of population trend
- Collect, analyze and present demographic data
- Suggest population control strategies

Part B: Demography

Learning Objectives <i>At the end of the session, the students will be able to-</i>	Contents	Teaching Methods	Teaching Aids	Teaching Hours	Assessment
Define demography , demographic focus and process	<i>Concept of Demography:</i> <ul style="list-style-type: none"> ➤ Definition of demography ➤ Demographic focus (Size, composition, distribution) ➤ Demographic process (Marriage, migration, fertility, social mobility, mortality) 	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L-4 T-4	Written Oral
Illustrate demographic cycle	<i>Demographic cycle:</i> <ul style="list-style-type: none"> ➤ Stages/steps of demographic cycle Implications of different demographic stages on health and development	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L-2 T-2	Written Oral
Explain demographic data and mention the sources of these data	<i>Collection of demographic data:</i> <ul style="list-style-type: none"> ➤ Sources (population census, records of vital statistics, health department and institutes, reports of special survey, periodic publications of Bureau of Statistics/,WHO,DGHS and others) ➤ Census (definition, history of census in Bangladesh, types and methods of conducting census) <ul style="list-style-type: none"> ➤ Essential elements of census data (total population, age/sex composition/marital status, language spoken, education, economic status, fertility, citizenship, place of birth etc.) ➤ Essential elements in conducting census (Planning, format instrument development, manpower nomination, training of manpower, data collection, compiling & report writing) 	Lecture Tutorial Field visit	Multimedia Projector, OHP, White Boards and markers, Handouts	L-8 T-8 FV-8	Written Oral Assignment
Describe <i>Population estimation</i> with the methods and calculation using formula	<i>Population estimation:</i> <ul style="list-style-type: none"> ➤ Definition and methods (natural increase rate, arithmetical & geometrical programming method) of population estimation 	Lecture Tutorial Practical	Multimedia Projector, OHP, White Boards and	L-2 T-2 P-2 FV-8	Written Oral Practical

			markers, Handouts		
Define <i>fertility and calculate fertility statistics using formula</i>	<i>Fertility and fertility statistic estimation:</i> ➤ Definition, process and factors related to fertility Measurements of fertility (GR, GFR, TFR, GRR, NRR, marriage and pregnancy rate)	Lecture Tutorial Practical	Multimedia Projector, OHP, White Boards and markers, Handouts	L-4 T-4 P-03	Written Oral Practical
Enumerate and calculate mid -year population, growth of population, population density, population pyramid	<i>Measures of population:</i> ➤ Introduction, objectives & measures of population Description & estimation of different measures of population (mid -year population, growth of population, population density, population pyramid)	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L-04 T-04 P-03	
Define and calculate population trend	<i>Population trends:</i> ➤ Introduction, population trend of world and Bangladesh/ Age and sex pyramid of Bangladesh Causes and effects of overpopulation in socio-economic sectors	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L-04 T-04 P-03	Written Oral Practical
Explain the importance of population control programme in Bangladesh and methods of control	<i>Population control in Bangladesh:</i> ➤ Need of population control programme in Bangladesh and methods of control ➤ Introduction, barriers, measures, suggestions regarding population control Intensive measures for rapid control for population	Lecture Tutorial	Multimedia Projector, OHP, White Boards and markers, Handouts	L-04 T-04 P-02 FV-08	

Paper III: Food Safety Management

Paper Title	Number	Year
FOOD SAFETY MANAGEMENT	III	3 rd

Part	Title	Teaching Methods And Hours				
		Lecture	Tutorial	Practical	Field visit	Total
	Food Safety Management	44	47	19	40	150

Assessment Methods					
Assessment Type	Written	Oral	Practical	Assignment/Formative	Total
Marks	100	40	40	20	200

Course Objectives

At the end of the course, the students will be able to-

- a. Evaluate food safety management systems in national and global contexts
- b. Develop and inspect food safety management systems
- c. Show positive attitudes towards implementation of acquired knowledge and skills to manage food safety

List Of Competencies

- Prevention and control of food and water borne disease
- Identify and Analyze hazards in food
- Development of food safety plan
- Assessment of HACCP implementation in food industries
- Performing auditing and certification

Learning Objectives <i>At the end of this session the students will be able to</i>	Contents	Teaching methods	Teaching Aid/AV Aids	Teaching hours	Assessment
<ul style="list-style-type: none"> Define food safety Describe food safety management systems globally and nationally 	<ul style="list-style-type: none"> Definition of food safety Components of food safety and quality control (QC) / quality assurance (QA) Food safety and QC/QA framework in Bangladesh International Food safety policy and regulation Overview on international bodies: Codex, OIE, ISO, IPPC etc. and Bangladesh perspectives 	<ul style="list-style-type: none"> Lecture Tutorial 	<ul style="list-style-type: none"> White board Multimedia projector Internet 	L: 4 T: 4	<ul style="list-style-type: none"> Written Oral
<ul style="list-style-type: none"> List hazards in food Acquire knowledge on prevention and control of foodborne diseases 	<ul style="list-style-type: none"> Food safety hazards Types and sources of hazards Major causes and control and prevention of foodborne diseases Extent of foodborne diseases in national and international context Impact of foodborne diseases on public health, food industry and trades Prevention and control of foodborne diseases Case studies: Food borne diseases to determine the cause and measures for control and prevention 	<ul style="list-style-type: none"> Lecture Tutorial Field visit 	<ul style="list-style-type: none"> White board Multimedia projector 	L: 4 T: 4 FV-4	<ul style="list-style-type: none"> Written Oral Assignment
<ul style="list-style-type: none"> Differentiate additives and fortificants Evaluate the use of additives 	<ul style="list-style-type: none"> Definition and types of food additives Definition of food fortificants Use and misuse of food additives 	<ul style="list-style-type: none"> Lecture Tutorial Practical 	<ul style="list-style-type: none"> White board Multimedia projector Laboratory facilities 	L: 2 T: 4 P: 2	<ul style="list-style-type: none"> Written Oral Practical
<ul style="list-style-type: none"> Differentiate food contamination 	<ul style="list-style-type: none"> Definition of food contamination and adulteration Common adulterants in food 	<ul style="list-style-type: none"> Lecture Tutorial 	<ul style="list-style-type: none"> White board 	L: 3 T: 3	<ul style="list-style-type: none"> Written

<p>and adulteration Enumerate sources and types of contaminants</p> <ul style="list-style-type: none"> Describe impact of food contamination and adulteration 	<ul style="list-style-type: none"> Sources and types of contaminants in food Impact of food adulteration and contamination on public health and trades 		Multimedia projector		-Oral
<ul style="list-style-type: none"> Define standards of food, harmonization and adoption Describe food standards from both national and international perspectives 	<p>Food standards</p> <ul style="list-style-type: none"> Bangladesh Standards Codex and other international standards Harmonization and adaptation Harmonization and adaptation of regional and international food standards 	<ul style="list-style-type: none"> Lecture Tutorial Practical Field visit 	<ul style="list-style-type: none"> White board Multimedia projector Laboratory facilities 	<p>L: 4 T: 4 P: 2 FV: 4</p>	<ul style="list-style-type: none"> Written Oral Practical Assignment
<ul style="list-style-type: none"> Assess, manage and communicate risk analysis 	<p>Risk Analysis in food safety</p> <ul style="list-style-type: none"> Risk assessment Risk management Risk communication 	<ul style="list-style-type: none"> Lecture Tutorial Practical Field visit 	<ul style="list-style-type: none"> White board Multimedia projector Laboratory facilities 	<p>L: 4 T: 4 P: 2 FV: 6</p>	<ul style="list-style-type: none"> Written Oral Practical Assignment
<ul style="list-style-type: none"> Define GHP, GMP Explain Food safety plan Outline the importance of HACCP (Hazard Analysis Critical Control Point) in food safety Develop HACCP Plan Illustrate role of government and food 	<ul style="list-style-type: none"> Food safety Plan Steps in food safety plan Standard Operating procedure (SOP) and its contents Definition, objectives and benefits of HACCP History of HACCP GHP, GMP Food safety Management and HACCP Prerequisite Programmes for HACCP HACCP Plan Basic principles of HACCP 	<ul style="list-style-type: none"> Lecture Tutorial Practical Field visit 	<ul style="list-style-type: none"> White board Multimedia projector 	<p>L: 7 T: 8 P: 4 FV: 8</p>	<ul style="list-style-type: none"> Written Oral Practical Assignment

industries in implementation of HACCP	<ul style="list-style-type: none"> - Steps of Implementation of HACCP - Identification of CCP - Decision tree - Role of Govt. and industries in implementation of HACCP - Challenges of implementation of HACCP 				
<ul style="list-style-type: none"> • Managing food safety with ISO system 	<ul style="list-style-type: none"> - ISO Food Safety Management System - Overview of the ISO 22000 and others, including Food Safety System Certification (FSSC) 22000 and British Retail Consortium (BRC) Global Standards for Certification 	<ul style="list-style-type: none"> -Lecture -Tutorial -Practical -Field visit 	<ul style="list-style-type: none"> White board - Multimedia projector - Internet 	<ul style="list-style-type: none"> L: 4 T: 4 P: 4 FV: 4 	<ul style="list-style-type: none"> - Written -Oral - Practical - Assignment
<ul style="list-style-type: none"> • Define sanitary and phytosanitary (SPS)measures • Understand Agreement on application of SPS measures • Understand Technical Barriers to Trade (TBT) 	<ul style="list-style-type: none"> - Definition of SPS measures - Salient features of SPS Agreement and its implication on food safety - Salient features of TBT Agreement and its implication on food safety 	<ul style="list-style-type: none"> -Lecture -Tutorial - Field visit 	<ul style="list-style-type: none"> White board - Multimedia projector - Internet 	<ul style="list-style-type: none"> L: 4 T: 4 FV: 4 	<ul style="list-style-type: none"> - Written -Oral - Assignment
<ul style="list-style-type: none"> • Understand healthy food market, school and households 	<ul style="list-style-type: none"> - Food safety programme in food market - Food safety programme in School - Food safety at household level 	<ul style="list-style-type: none"> -Lecture -Tutorial -Practical -Field visit 	<ul style="list-style-type: none"> White board - Multimedia projector 	<ul style="list-style-type: none"> L: 4 T: 4 P: 2 FV-4 	<ul style="list-style-type: none"> - Written -Oral - Practical - Assignment

<ul style="list-style-type: none"> • Develop competencies in Food safety/HACCP validation and verification • Analyze audit reports and interpret findings • Explain certification of Food safety/HACCP 	<ul style="list-style-type: none"> - Auditing and Certification - Validation and verification of HACCP - Contents of an audit report - Interpretation of an audit report - Certification of Food safety/HACCP 	<ul style="list-style-type: none"> -Lecture -Tutorial -Practical -Field visit 	<ul style="list-style-type: none"> White board - Multimedia projector 	<ul style="list-style-type: none"> L: 4 T: 4 P: 3 FV: 06 	<ul style="list-style-type: none"> - Written -Oral - Practica l - Assign ment
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4th Year
Paper I: Public Health Laws

Paper Title	Paper		Year
	Number	Part	
PUBLIC HEALTH LAWS	I	Title	No.
		Public Health Laws	A
		Health Service Management	B
		Professional Practice	C
			4th

Part	Title	Teaching Methods And Hours				Total
		Lecture	Tutorial	Practical	Field visit	
A	Public Health Laws	40	60	08	32	140
B	Health Service Management	32	46	08	24	110
C	Professional Practice	20	24	08	08	60
Total		92	130	24	64	310

Assessment Methods					
Assessment Type	Written	Oral	Practical	Assignment/Formative	Total
Marks	100	40	40	20	200

PART-A: Public Health Laws

Course Objectives

At the end of the course the students will be able to -

- a. Describe public health laws related to food safety and quality
- b. Perform food inspection and other duties and responsibilities as assigned by the laws
- c. Enforce laws against the offenders contaminating and or adulterating food items.

List Of Competencies

- Enforcing laws to ensure safe and quality food
- Improving public health situation through implementation of relevant public health laws related to food safety and quality
- Coordinating with other food inspection and enforcement agencies
- Apply International Health Regulation to the international travelers
- Motivate stake holders as well as common people to abide by the Public Health Laws
- Suggest judicial officers regarding penalties for violation of laws.

Part-A: Public Health Laws

Objectives At the end of the session, the students will be able to- -	Contents	Teaching Methods	Teaching Aids	Teaching Hours	Assessment
Define terms in laws	Common terms in public health laws: - Laws, act, ordinance, rules, power, enforcement, delegation, regulation and convention Private Law, Public Law, Bangladesh Penal Code and Bangladesh Criminal Procedure - Cognizable and Non-cognizable offence, Crime, Public Health Law	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-2 T-2	Written Oral
Describe the orders assigning for sanitary inspectors to perform additional duties	Power delegated sanitary inspectors: - Govt. orders and circulars on food safety and quality and others responsibilities assigned to sanitary inspectors.	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-1 T-2	Written Oral Practical Assignment
Narrate the laws on food safety and quality	Nirapad Khaddyo Aain, 2013	Lecture Tutorial Field visit	White board, markers, multimedia projectors, documents	L-07 T-08 FV-08	Written Oral Assignment
List the rules on food safety and quality	Nirapad Khaddyo Bidhimala, 2014	Lecture Tutorial Field visit	White board, markers, multimedia projectors, documents	L-06 T-06 FV-08	Written Oral Assignment
Enumerate laws related to public health issues	The Penal Code,1860: Chapter XIII-Sections:264-267; Chapter XIV- Sections 268-294	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-1 T-2	Written Oral
Explain and perform safety and quality control of BMS	The Breast Milk Substitutes (Regulation of Marketing) 1984, Rules, 1993	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-1 T-2	Written Oral
Explain and perform safety and quality control of iodized salts	Iodine Deficiency Disorders Prevention Act, 1989 and its Rules	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-1 T-1	Written Oral

Describe laws which regulates public health issues of hotel and restaurants	The Hotels and Restaurants Ordinance 1982: Section-5, 20,21 The Bangladesh Hotel and Restaurant Act, 2014	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-01 T-02	Written Oral
Explain the laws related to food safety and quality	The Special Power Act 1974: Section-25c	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-01 T-02	Written Oral
Narrate the law controlling smoking and use of tobacco products	The smoking and tobacco products use (control) Act, 2005	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-01 T-01	Written Oral
Mention and perform mobile food inspection	The Mobile Court Act 2009	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-01 T-02	Written Oral
Describe roles of BSTI in food safety and quality control	The Bangladesh Standards and Testing Institution Ordinance, 1985	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-1 T-02	Written Oral
Explain and perform examination of weights and measures of food products	Standards of Weights and Measure Ordinance, 1982	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-01 T-02	Written Oral
Enumerate and perform examination of labeling of food products	Product Labeling Policy, 2006	Lecture Tutorial Practical Field visit	White board, markers, multimedia projectors, documents	L-01 T-02 P-02 FV-08	Written Oral Practical Assignment
Describe the laws related to Animal Slaughtering and Meat Quality Control	Animal Slaughtering and Meat Quality Control Act, 2011	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-01 T-02	Written Oral
Narrate fish and fish products inspection and quality control by the concerned authority	Fish and Fish Products (Inspection and Quality Control) Ordinance 1983	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-01 T-02	Written Oral
Enumerate fish and fish products inspection and quality control by the concerned authority	Fish and Fish Products (Inspection and Quality Control) Rules 2008	Lecture Tutorial Practical	White board, markers, multimedia projectors, documents	L-01 T-02 P-02	Written Oral Practical
Describe laws related to public health specially food safety and quality in the city corporations	The Local Govt. (City Corporation) Ordinance, 2008: Schedule-III-Section 1-15; Schedule V.	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-02 T-02	Written Oral

Mention laws related to public health specially food safety and quality in the municipalities	The Local Govt. (Municipalities) Ordinance, 2008: Schedule-II-Section 1-31; Schedule IV.	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-02 T-04	Written Oral
Explain the rights of consumers under law	The Consumers' Rights Protection Act 2009	Lecture Tutorial Field visit	White board, markers, multimedia projectors, documents	L-01 T-02 FV-08	Written Oral Assignment
Narrate the provisions for International Health Regulations	The International Health Regulations: - Introduction - Internationally notifiable diseases - Diseases under International Surveillance - Quarantinable diseases: steps and process of quarantine - International health law for travelers - Medical fitness certificate for international travellers. - Vaccination certificates for international travellers: Authority of vaccination, Format of vaccination certificate, Formulation and process of vaccination, Validity of certificate.	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-02 T-02	Written Oral
Explain laws related to environmental health	The Environmental Protection Act, 1995 Environment Court Act, 2010	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-03 T-04 P-02	Written Oral
Describe laws related to occupational safety and health in factories	The Bangladesh Labour Law, 2006 Chapter V: Section 51-60 Chapter VIII: Section 89-92	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-01 T-02	Written Oral
Describe laws related to Formalin	Formalin Control Act, 2015 Formalin (Import, production, transport, deposit, sale, use) Control Rules, 2015	Lecture Tutorial Practical	White board, markers, multimedia projectors, documents	L-01 T-02 P-02	Written Oral Practical
Describe import policy for food items	Import Policy Order-current one Definitions, General conditions of imports of goods, Additional conditions for import of food for human consumptions	Lecture Tutorial	White board, markers, multimedia projectors, documents	L-01 T-02	Written Oral

PART B: Health Services Management

Course Objectives

At the end of the course, the students will be able to -

- a. Describe the history and basic concept of management
- b. Narrate the management process like planning, organizing, staffing, coordinating and budgeting
- c. Enumerate the types of manager, basic management roles and skill
- d. List the elements of organizing
- e. Manage human resources in organization
- f. Perform the employee motivation and performance
- g. Describe leadership and influence processes
- h. Manage information and information technology
- i. Develop skill on supervision, monitoring and performance appraisal
- j. Describe the health care delivery system in Bangladesh including the national health care program
- k. Develop clear understanding on Primary Health Care management and municipal health service delivery including the administration
- l. Develop skills on quality assurance

List Of Competencies

- Application of basic concept of management
- Ability to develop to problem identification, development of options for solution and taking corrective measures
- Leading programmes/activities as Programme Manager
- Ability to develop skills on health delivery system and also addressing and practicing quality assurance in the field
- Manage office including logistics

Part-B: Health Services Management

Learning Objectives <i>At the end of the session the students will be able to</i>	Contents	Teaching Methods	Teaching Aids	Teaching Hours	Assessment
Define common terminology of management	Basic concept of management <ul style="list-style-type: none"> - Definition of management, key aspect of management, coping with changing environment - Managerial function, managerial roles, how do managers learn 	Lecture	White/Black board, Chalk/marker OHP/Multimedia projector	L-02	Written Oral
m. Explain management process n. Analyze Strength Weakness Opportunities and Threats (SWOT)	Management process - planning, organizing, staffing, coordinating and budgeting <ul style="list-style-type: none"> - Definition of planning, Planning cycle, types of planning, - Setting objectives, goal, mission, vision and target - SWOT analysis and priority settings - Organizing, staffing, coordinating and budgeting 	Lecture Tutorial	White/Black board, Chalk/marker Multimedia projector Charts	L-04 T-04	Oral Written
Describe management style, skills and efficiencies	Management style, Basic managerial role, managerial skill, Managing effectiveness <ul style="list-style-type: none"> - Management style, basic managerial role, - Managerial skill, managing effectiveness 	Lecture Tutorial	White/Black board, Chalk/marker OHP/Multimedia projector	L-02 T-04	Written Oral
<ul style="list-style-type: none"> • Describe leadership, motivation, Supervision, 	Leadership and motivation <ul style="list-style-type: none"> - Introduction and Definition of leadership, 	Lecture Tutorial	Multimedia projector	L-02 T-04	Written Oral

monitoring and performance appraisal	characteristic of good and effective leader - Concept of motivation and theories, process of motivation				
<ul style="list-style-type: none"> Narrate supervision, monitoring and performance appraisal (evaluation) 	Supervision, monitoring and performance appraisal <ul style="list-style-type: none"> Concept of monitoring, objective of monitoring, steps of monitoring, Designing and use of monitoring tools and monitoring findings Definition of supervision, concept of supportive supervision, criteria of a good supervisor, supervisor report writing Definition of performance appraisal, objectives of performance appraisal, elements of good performance appraisal and performance appraisal system Guideline for conducting appraisal interview 	Lecture Tutorial	White/Black board, Chalk/marker OHP/Multimedia projector	L-02 T-04 P- 02	Written Oral
<ul style="list-style-type: none"> Explain health care delivery system in Bangladesh 	Health care delivery system in Bangladesh including the national health care program pertinent job description of Sanitary Inspectors <ul style="list-style-type: none"> Concept of health care delivery system (Primary, secondary and tertiary care), Organizational structure of DGHS, Division, District and Upazilla level health organization Type of services available at different 	Lecture Tutorial Practical Field visit	OHP/Multimedia projector Sampling equipment	L-04 T-04 FV-08	Written Oral Assignment

	<p>level, roles and responsibilities at different level.</p> <ul style="list-style-type: none"> - An overview of MDGs - Program approach and Health Population and Nutrition Sector Development program (HPNSDP) and City Corporation/Municipalities health care service delivery, Program running by different Line directors under DGHS like IMCI,EOC,ESP etc. 				
<ul style="list-style-type: none"> • Describe primary health care management 	<p>Primary health care management and municipal health service delivery including the administration-</p> <ul style="list-style-type: none"> - Definition of primary health care and elements, upazilla health system - Services available at UHC, Sub Centre, Health and Family Welfare Centre, community clinic and domiciliary level, - Referral system, community involvement, accountability framework, Stake holders participation for providing primary health care and coordination, - Sanitation and management issue for prevention of food adulterations - City corporation/Municipal health delivery system, urban primary health care package, role of different stakeholder in 	<p>Lecture Tutorial Field visit</p>	<p>White/Black board, Chalk/marker OHP/Multimedia projector</p>	<p>L-04 T-06 FV-08</p>	<p>Written Oral Assignment</p>

	providing urban health care				
<ul style="list-style-type: none"> Explain Quality Assurance and TQM 	Quality assurance <ul style="list-style-type: none"> Definition of Quality assurance, Quality assurance cycle, Quality dimension and focus, Quality indicators and measurement in different service areas/program Concept of Total Quality Management(TQM) , Continuous improvement (Kaizen), Application of 5S 	Lecture Tutorial	White/Black board, Chalk/marker OHP/Multimedia projector	L-02 T-04 P- 02	Written Oral
<ul style="list-style-type: none"> Describe logistic management 	Logistic management <ul style="list-style-type: none"> Store management- Selection of store site, material storage and supply, cleanliness ,maintenance, security Inventory management Classification of inventory, Inventory method and management, internal control and audit 	Lecture Tutorial	White/Black board, Chalk/marker OHP/Multimedia projector	L-02 T-04 P- 02	Written Oral
<ul style="list-style-type: none"> Describe and perform business communication and record keeping 	Office Management <ul style="list-style-type: none"> Business communication including official letter and report writing Record keeping and file management 	Lecture Tutorial	White/Black board, Chalk/marker OHP/Multimedia projector	L-04 T-06 P- 02	Written Oral
<ul style="list-style-type: none"> Generate, compile and validate data Prepare and provide feedback on reporting Manage implication and reporting system 	Data generation, compilation, validation, report preparation , feedback , management implication and reporting system <ul style="list-style-type: none"> Data generation, compilation, validation, report preparation, feedback, management implication Reporting system consistent with MIS 	Lecture Tutorial Field visit	White/Black board, Chalk/marker OHP/Multimedia projector Computer and accessories	L-04 T-06 FV-08	Written Oral Assignment

Part C: Professional Practice

Course Objectives

At the end of the course, the students will be able to -

1. Identify the professional responsibilities of a sanitary inspector
2. Describe the different aspects of ethics
3. Identify and apply ethical frameworks to the sanitary inspectorship profession
4. Assess the importance of codes of conduct in the profession
5. Use a case study approach to investigate the barriers to professional practice and strategies for dealing with conflict situations
6. Undertake a personal development portfolio, identifying areas of personal strength and weakness
7. Engage in reflective learning to further develop professional practice

List Of Competencies

- Development of professional ethical responsibilities
- Assessment of importance of codes of conduct
- Development of personal portfolio

Part-C: Professional Practice

Learning Objectives <i>At the end of the session, the students will be able to</i>	Content	Teaching Methods	Teaching Aids	Teaching Hours	Assessment
Identify the professional responsibilities of a sanitary inspector	Due professional care independence Professional identity	Lecture Tutorial	Whiteboard, markers, Multimedia projectors, work	L-03 T-04	Written Oral
<ul style="list-style-type: none"> • Define ethics • Define ethical dilemma • Describe informed consent • Discuss conflict & conflict solving • Evaluate taking decision under resource constraints • Describe Honouring Individual autonomy • Define Etiquette • Define Professional malconduct • Discuss professional confidentiality • Describe privileged communication • Define malpractice • List consumers' rights • Identify rights & responsibilities of a sanitary inspector <p>Identify and apply ethical frameworks to the sanitary inspectorship profession</p>	<ul style="list-style-type: none"> • Ethics • Ethical dilemma • Informed consent • Conflict & conflict solving • Taking decision under resource constraints • Honouring Individual autonomy • Etiquette • Professional infamous conduct • Professional secrecy • Privileged communication • Malpractice • Consumers' rights • Rights & responsibilities of a sanitary inspectors 	Lecture Tutorial	Whiteboard, markers, Multimedia projectors,	L-03 T-04 P- 02	Written Oral

Assess the importance of codes of conduct in the profession	Develop model code of conduct for SI	Lecture Tutorial	Whiteboard, markers, Multimedia projectors,	L-02 T-04	Written Oral Assignment
Use a case study approach to investigate the barriers to professional practice and strategies for dealing with conflict situations	Review professional responsibilities and code of conduct Identify internal barriers Identify external barriers Identify and discuss potential strategies to deal with conflict	Lecture Tutorial Practical Field visit	Whiteboard, markers, Multimedia projectors	L-04 T-04 P-04 FV-08	Written Oral Practical Assignment
Undertake a Personal Development Portfolio, identifying areas of personal strength and weakness	Theory and practice of PDPs Tools for self evaluation	Lecture Tutorial Practical	Whiteboard, markers, Multimedia projectors	L-04 T-04 P- 02	Written Oral Practical Assignment
Engage in reflective learning to further develop professional practice	Theory and practice Kolb's Cycle	Self reflection	Whiteboard, markers	L-04 T-04	Self evaluation report

Paper II: Food Inspection

Paper Title	Number	Year
FOOD INSPECTION	II	4 th

Part	Title	Teaching Methods And Hours				
		Lecture	Tutorial	Practical	Field visit	Total
Food Inspection		68	100	66	136	370

Assessment Methods					
Assessment Type	Written	Oral	Practical	Assignment/Formative	Total
Marks	100	40	40	20	200

Course Objectives
<p>At the end of the course, the students will be able to-</p> <ol style="list-style-type: none"> 1. Acquire knowledge on inspection of food, food establishments, hat-bazaars, camps etc 2. Develop skills on collection and transportation of food samples 3. Develop skills on documentation and reporting 4. Implement a risk based approach in the planning and execution of food inspections effectively 5. Prepare themselves attitudinally for implementation of best knowledge and skills on food inspection to improve food safety and quality.

List Of Competencies
<ul style="list-style-type: none"> • Prepare inspection check-list • Identify and use of inspection equipment • Categorization of food products and business according to risk they pose • Planning of inspection of food products and businesses according to risk • Performing inspection of food products and businesses using risk based approach • Performing sample collection and transportation • Performing record keeping, documentation and reporting

Food Inspection

Learning Objectives <i>At the end of the session, the students will be able to</i>	Contents	Teaching Methods	Teaching Aids	Teaching Hours	Assessment
<ul style="list-style-type: none"> • Identify importance of food inspection • Describe risk-based food inspection compared with traditional inspection • Assess own skills and knowledge for food inspection • Differentiate between food chain and end product approach in food inspection 	<p>Concepts of modern/risk-based food inspection</p> <ul style="list-style-type: none"> - Food inspection - Risk-based food inspection - Traditional versus modern/risk-based food inspection - Role of food inspection in food safety and quality to improve public health - Knowledge and skills requirements for food inspectors. - Food chain approach to food safety and quality - Shifting from product based inspection to risk-based inspection 	Lecture Tutorial	White/Black board, Chalk/marker OHP/Multimedia projector	L-04 T-02	Written Oral

<ul style="list-style-type: none"> Define hazard, risk Describe risk assessment Categorize food products and businesses according risks they pose Plan inspection of food businesses and products on priority basis 	Risk categorization of food products and businesses <ul style="list-style-type: none"> Hazard Risk Risk assessment Risk categorization of food products Risk categorization of food businesses Inspection plans based on risk categorization 	Lecture Tutorial Practical Field visit	White/Black board, Chalk/marker Multimedia projector Charts	L-02 T-04 P-04 FV-08	Oral Written Practical Assignment
<ul style="list-style-type: none"> Describe inspection procedures and techniques 	General Inspection procedures and techniques <ul style="list-style-type: none"> Inspection procedures Inspection techniques 	Lecture	White/Black board, Chalk/marker OHP/Multimedia projector	L-02 T-04	Written Oral
<ul style="list-style-type: none"> Identify, describe and use inspection equipment and instruments 	Inspection equipment and instruments and their uses <ul style="list-style-type: none"> Types of instruments and equipment Description of instruments and equipment Use of instruments and equipment 	Lecture Tutorial Practical	Multimedia projector Inspection Instruments and Equipment like Thermometers,pH Meter, Laxo Meter etc	L-04 T-02 P-10	Written Practical Oral
<ul style="list-style-type: none"> Describe kits for detection of contaminants Detect contaminants in food 	Kits for detection of contaminants <ul style="list-style-type: none"> Mechanisms of action Uses of different kits for 	Lecture Tutorial Practical	White/Black board, Chalk/marker OHP/Multimedia projector Kits like formaline	L-02 T-02 P-04	Written Oral Practical

	detection of contaminants and adulterants		kit Food samples		
<ul style="list-style-type: none"> Describe sampling procedures Perform sampling techniques Arrange transportation of samples for laboratory analysis 	Sampling procedures and techniques and transportation of food items for laboratory analysis <ul style="list-style-type: none"> - Sampling procedures - Sampling Techniques - Transportation of food samples from field to lab 	Lecture Tutorial Practical Field visit	OHP/Multimedia projector Sampling equipment like scoop, spoon, sample deepers, forceps etc.	L-02 T-04 P-04 FV-08	Written Practical Oral Assignment
<ul style="list-style-type: none"> Describe inspection procedures Organize and perform inspection of food production industries/facilities 	Inspection procedures for food production industries/facilities <ul style="list-style-type: none"> - Objectives of inspection - Scope of inspection - Organizing inspection - Site assessment - Assessment of establishments /facilities - Assessment of product, product flow, raw materials additives, non food chemicals, packaging materials, labeling, storage and 	Lecture Tutorial Practical Field visit	White/Black board, Chalk/marker OHP/Multimedia projector Charts Pictures Models	L-04 T-08 P-08 FV-16	Written Oral Practical Assignment

	<p>transport facilities etc.</p> <ul style="list-style-type: none"> - Assessment of implementation of HACCP - Assessment of employees and their facilities and, training - Assessment of environmental sanitation, waste and effluent management, pest and rodent control etc - Monitoring and record keeping 				
<ul style="list-style-type: none"> • Introduce a checklist • Describe points for inspection • Identify missed points for inspection • Construct a template of checklists for inspection of food products and businesses 	<p>Checklists in inspection</p> <p>-Introduction</p> <p>-Description of points for inspection checklists</p> <p>-Construction of checklists for inspection of food products and businesses</p>	Lecture Tutorial Practical	White/Black board, Chalk/marker OHP/Multimedia projector Charts Pictures Models samples	L-04 T-08 P-08	Written Oral Practical
<ul style="list-style-type: none"> • Describe inspection procedures of fish and fish products • Organize and 	<p>Inspection of fish and fish products</p> <ul style="list-style-type: none"> - Typical problems 	Lecture Tutorial Practical	White/Black board, Chalk/marker OHP/Multimedia projector	L-04 T-04 P-04 FV-08	Written Oral Practical Assignment

perform fish and fish products inspection	associated with fish and fish products <ul style="list-style-type: none"> - Assessment of sanitary status of sales site - Assessment of freshness - Assessment of preservation - Dried fish: Rodent and pest control - Development of a checklist for inspection 	Field visit	Charts Pictures Samples		
<ul style="list-style-type: none"> • Describe inspection procedures of meat and meat products • Organize and perform meat and meat products inspection 	Inspection meat and meat products <ul style="list-style-type: none"> - Criteria for healthy and unhealthy meat - Antemortem and postmortem inspection of animals - Slaughtering house- criteria for an ideal slaughtering house - Transportation and preservation of meat - Personal hygiene and health of butchers - Inspection of poultry and poultry products - Development of a 	Lecture Tutorial Practical Field visit	White/Black board, Chalk/marker OHP/Multimedia projector Charts Pictures Samples -Lactometer -Formaline kit etc.	L-04 T-04 P-04 FV-4	Written Oral Practical Assignment

	checklist for inspection				
<ul style="list-style-type: none"> Describe inspection procedures of milk and milk products Organize and perform milk and milk products inspection 	<p>Inspection of milk and milk products</p> <ul style="list-style-type: none"> Composition and properties of milk Types of milk and milk products Preservation of milk Contamination and adulteration of milk Assessment of contaminants and adulterants in milk Inspection of milk products Development of a checklist for inspection 	Lecture Tutorial Practical Field visit	White/Black board, Chalk/marker OHP/Multimedia projector Charts Pictures Samples	L-02 T-04 P-04 FV-08	Written Oral Practical Assignment
<ul style="list-style-type: none"> Describe inspection procedures of restaurants and food service establishments Organize and perform inspection of restaurants and food service establishments 	<p>Inspection of restaurants and food service establishments including food services at special occasion</p> <ul style="list-style-type: none"> Registration Assessment of sites Assessment of premises including house/building Washing facilities for customers 	Lecture Tutorial Field visit	White/Black board, Chalk/marker OHP/Multimedia projector Charts Pictures	L-04 T-04 FV-16	Written Oral Assignment

	<p>Staff welfare facilities (washroom, store, changing etc.)</p> <ul style="list-style-type: none"> - Environmental sanitation of premises - Safety and quality of raw materials - Receiving raw materials, storage, transportation - Food preparation and area of preparation - Storage of cooked food - Food service facilities - Staff personal hygiene, health status - Development of a checklist for inspection 				
<ul style="list-style-type: none"> • Describe inspection procedures of street foods • Organize and perform inspection of street foods 	<p>Inspection of street foods</p> <ul style="list-style-type: none"> - Assessment of site and surroundings - Construction of vending place/shop, hashing facilities - Water supply - Storage facilities - Safety and quality of raw materials - GMP,GHP 	<p>Lecture Tutorial Field visit</p>	<p>White/Black board, Chalk/marker OHP/Multimedia projector Charts Pictures</p>	<p>L-04 T-04 FV-08</p>	<p>Written Oral Assignment</p>

	<ul style="list-style-type: none"> - Personal hygiene and health status of personnel - Development of a checklist for inspection 				
<ul style="list-style-type: none"> • Describe inspection procedures of hat-bazaars and temporary establishments/camps • Organize and perform inspection of hat-bazaars and temporary establishments/camps 	<p>Inspection of Hat-Bazaars, Temporary establishments/camps (e.g. Hajj camps, Ijtema, fair, trade fair etc)</p> <ul style="list-style-type: none"> - Assessment of site, - Environmental sanitation - Water supply and sanitation facilities - Development of a checklist for inspection 	Lecture Tutorial Field visit	White/Black board, Chalk/marker OHP/Multimedia projector Charts Pictures	L-02 T-04 FV-08	Written Oral Assignment
<ul style="list-style-type: none"> • Describe inspection procedures of retail and wholesale businesses • Organize and perform inspection of retail and wholesale businesses 	<p>Inspection of retail and wholesale food businesses</p> <p>Assessment of sites,- Environmental sanitation of the premises, Food storage facilities, Ventilation, lighting Rodent and pest control Transportation, handling, distribution facilities etc. Waste disposal Record keeping and documentation Verification of food labeling,</p>	Lecture Tutorial Field visit	White/Black board, Chalk/marker OHP/Multimedia projector Charts Pictures	L-04 T-04 FV-08	Written Oral Assignment

	weight etc. Development of a checklist for inspection				
<ul style="list-style-type: none"> Describe inspection procedures of fresh fruits and vegetables Organize and perform inspection of fresh fruits and vegetables 	Inspection of fruits and vegetables <ul style="list-style-type: none"> Assessment of shape, size, colour, injury, bruise, mould, compactness, maturity etc of fresh fruits Inspection of dry fruits Development of a checklist for inspection 	Lecture Tutorial Practical Field visit	White/Black board, Chalk/marker OHP/Multimedia projector Charts Pictures Models samples	L-04 T-04 P-04 FV-04	Written Oral Practical Assignment
<ul style="list-style-type: none"> Describe import procedures of food items Narrate inspection procedures of imported food items Describe sample collection procedures <u>Organize and perform inspection of imported food items</u> 	Inspection of imported food items at ports <ul style="list-style-type: none"> Checking of import documents Assessment of transportation facilities Assessment of safety and quality of food items Collection of samples and laboratory test Development of a checklist for inspection 	Lecture Tutorial Field visit	White/Black board, Chalk/marker OHP/Multimedia projector Charts	L-04 T-08 FV-16	Written Oral Assignment
<ul style="list-style-type: none"> Recognize emergency situation Describe inspection procedures in 	Food inspection in emergency situations <ul style="list-style-type: none"> Assessment of primary 	Lecture Tutorial	White/Black board, Chalk/marker OHP/Multimedia projector	L-06 T-10 P-04	Written Oral

<p>emergency situations</p> <ul style="list-style-type: none"> Organize and perform food inspection in emergency situations 	<p>production level</p> <ul style="list-style-type: none"> Assessment of retail and storage facilities Assessment of food handling and processing Considerations for home preparation and storage of foods Inspection for assessing and salvaging perishable and packaged foods Development of a checklist for inspection 		<p>Charts</p> <p>Pictures</p>		
<ul style="list-style-type: none"> Describe regulatory instruments for enforcement, non compliance response Identify applicable enforcement actions Narrate appeal process 	<p>Enforcement and compliance</p> <ul style="list-style-type: none"> Regulatory basis (applicable food laws, rules and regulations) Compliance and enforcement policy (Responsibilities and principles) Response to non compliance Enforcement actions and appeal process 	<p>Lecture Tutorial Field visit</p>	<p>White/Black board, Chalk/marker</p> <p>OHP/Multimedia projector</p> <p>Documents</p>	<p>L-04 T-08 FV-08</p>	<p>Written Oral Assignment</p>

<ul style="list-style-type: none"> • Describe documentation, record keeping and reporting procedures of food inspection • Perform documentation, record keeping and reporting procedures of food inspection 	<p>Documentation, Record keeping and Reporting</p> <ul style="list-style-type: none"> - Define documentation - Purpose and techniques of documentation - Template of documentation - Define recordkeeping - Purpose and technique of recordkeeping - Template of Recordkeeping - Define reporting, purpose of reporting - Template of reporting 	<p>Lecture Tutorial Practical Field visit</p>	<p>White/Black board, Chalk/marker OHP/Multimedia projector Forms</p>	<p>L-04 T-08 P-08 FV-08</p>	<p>Written Oral Practical Assignment</p>
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Outline of Institutional Academic Laboratory

Environmental Health (2nd Year: 4th Paper)

Lab Equipment & Accessories:

1. Hydrometer,
2. Hygrometer,
3. Arsenic Testing Kit,
4. Water filter,
5. Exhaust Fan,
6. Dustbin
7. Helmet
8. Chest guard,
9. Googles.

Models:

1. Incinerator,
2. Water Pump,
3. Septic Tank ,
4. Healthful house,
5. Water seal latrine,
6. ETP,
7. Household plumbing,
8. Water Filter.

Charts:

1. Hydrolic cycle,
2. Septic Tank,
3. Bore hole latrine,
4. Water seal latrine,
5. Aqua privy,
6. Waste disposal plant.

Institutional Attachment or Field Visit:

1. Amin Bazar Dumping Station, DNCC,
2. Matuail Sanitary Land Filling , DSCC.

Competency Development:

1. Suggest water purification on small scale and large scale
2. Assessment of physical quality of water
3. Physical assessment of sources of pollution of ambient air and indoor air
4. Measurement of sound level
5. Suggest sanitary disposal of waste
6. Perform disinfection of aircraft, ships and cargoes
7. Detect occupational hazards
8. Suggest correction measures to remove occupational hazards.

Medical Entomology (2nd Year: 5th Paper)

Lab Equipment & Accessories:

Models:

Mosquitoes,
House flies,

Sand flies,
Cockroaches,
Bed bugs,
Lice ,
Scabies mites.

Charts:

Life cycle of mosquitoes,
Life cycle of house-flies,
Life cycle of sand flies,
Life cycle of scabies mites.

Institutional Attachment or Field Visit:

IEDCR, Mohakhali, Dhaka,

Competency Development:

- Identification of arthropods that transmit diseases (vectors) in Bangladesh
- Demonstration of breeding sites, resting places and feeding behavior of vectors
- Participation in the vectors control activities to prevent vector borne diseases.

Public Health (3rd Year 1st Paper)

Lab Equipment & Accessories:

1. Models:

Healthful school building, Food pyramid,
Fish, Meat, Hen, Birds, Fruits, Vegetables,

2. Specimen:

Rice, Wheat, Iodized salt, Oil, Ghee,
Fish, Meat, Vegetables, Fruits,
Poster, Leaflet, Flip chart, Flash card,
Folder, pamphlet, Flannel board,
Radio, Television, Newspaper.

Institutional Attachment or Field Visit:

1. IPHN
2. ICDDR'B
3. BIRDEM
- 4.. Health Education Bureau, DGHS.

Competency Development:

- Detect hazardous environment of educational institutes
- Suggest corrective measures of faulty sitting arrangement for the students

- Identify risk factors for the students and teachers in the institutes
- Assess nutritional status and interpret growth chart
- Detect unhygienic conditions of classroom
- Suggest to prepare balance diet for different categories of people

Food Safety Management (3rd Year 3rd Paper)

Lab Equipment & Accessories:

1. Lactometer,
2. Hydrometer,
3. Arsenic Testing kit,
4. Formalin Testing kit,
5. Carbide Testing kit,
6. Sampling equipment.

Charts:

Food chain, HACCP , Food Adulteration, Food fortification,

Institutional Attachment or Field Visit:

NSFL, Mohakhali, Dhaka,

Water Testing Lab, IPH, Mohakhali, Dhaka,

Food Testing Lab, IPH, Mohakhali, Dhaka,

Food Testing Lab, IPHN, Mohakhali, Dhaka,

Food Testing Lab, DSCC, Dhaka.

Competency Development:

1. Prevention and control of food and water borne disease
2. Identify and Analyze Analysis of hazards in food
3. Development of food safety plan
4. Assessment of HACCP implementation in food industries
5. Performing auditing and certification.

Food Inspection (4th Year 2nd Paper)

Lab Equipments and Accessories:

1. Thermometer,
2. Lactometer,
3. Hydrometer,
4. Torch light,
5. Litmus paper,
6. PH Meter,
7. Beuterorefractometer,
7. Arsenic Testing kit,
8. Formalin Testing kit,
9. Carbide Testing kit,
10. Sampling equipment.

Outline of Special Laboratory Attachment

Institutional Attachment or Field Visit:

NSFL, Mohakhali, Dhaka,
Water Testing Lab, IPH, Mohakhali, Dhaka,
Food Testing Lab, IPH, Mohakhali, Dhaka,
Food Testing Lab, IPHN, Mohakhali, Dhaka,
Food Testing Lab, DSCC, Dhaka.

Competency Development:

- Prepare inspection check-list
- Identify and use of inspection equipment
- Performing sample collection and transportation
- Performing record keeping, documentation and reporting .