

Curriculum for Diploma in Dental Technology (DDT)

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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

Directorate General of Medical Education (DGME)

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
Director
Centre for Medical Education (CME)

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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Course Overview

Course Aims:

To prepare dental technologist for dental technology department with proper knowledge, skill and attitude so that he/she can perform her/his duties accurately with the dental surgeon as per her/his need and as well as with the patient.

Course Objectives:

After successful completion of the 4 years Diploma in dental Technology course, the students will be able to learn:

- Assist the dental surgeon for major and minor oral and facial surgery such as
 - i) Extraction of teeth and surgical extraction of impacted teeth
 - ii) Cyst operation and apisectomy operation
 - iii) Operative procedure after accidental trauma of maxilla and mandible
 - iv) Different kinds of conservative treatment
 - v) During orthodontic procedure by fixed and removable appliance
 - vi) Different kind of pedodontic procedure
 - vii) Prosthetic clinical and lab work
- Do by himself/herself the following works:
 - i) Advice to the patient about oral hygiene
 - ii) Construction and repair work of denture, crown, bridge and other dental appliances
 - iii) Minor dental services such as scaling, polishing, dressing, temporary and permanent filling of deciduous teeth.
 - iv) Extraction of the deciduous teeth under the direction of the dental surgeon.
 - v) Sterilization of the instruments
 - vi) Maintenance of the stock-ledger/ departmental records/ preparation of indents/ maintenance of breakage missing equipments and instruments.
 - vii) Maintenance of lab rooms and surgery rooms properly.
 - viii) Interpretation of the prescription of the dental surgeon and advice to the patient.
 - ix) General management of the patient where the services of a Dental surgeon is not available
 - x) Be aware of the role and scope of dental technologist in public health.
 - xi) Know the general condition of the patient such as hypertension, diabetes and patient with different types of blood dyscrasiasis.
 - xii) Contribute to the future development of the dental technology training and education.

Course Details

A. Course Title: Diploma in Dental Technology (DDT).

B. Course philosophy and rational

The dental practice requires four handed treatment. Dental surgery/Oral surgery needs helping hands to assist the dental surgeon in maintaining sterilization, management of patient, supplying surgical instruments and equipments etc.

The various technical works need technical help such as making cast, clasp, splints, suture, crown, budge etc. Dental treatment also need indent of materials, supervision of cleanliness, maintenance of stock ledger etc which are not possible by a dental surgeon alone and so Diploma Dental Technologist is necessary for proper and effective dental treatment

This course finds its rationale to develop adequate number of Medical Technologists in the Dentistry disciple to cope up with growing demand and expansion of health care services in different sectors and to meet the desired need of Dental surgeon/Technologist ratio in Bangladesh.

C. Conditions for entrance:

1. Qualifications & prerequisite:
 - (i) SSC Science or equivalent with Science with Physics, Chemistry and Biology.
 - (ii) Candidate has to secure required grade point in the SSC examinations which will be decided by the concern competent authority.
 - (iii) Candidate passed SSC examination in current Year and previous 3rd Year is eligible for admission or as decided by the authority for each year of admission.

D. Examinations for Entrance/Admission Test:

All candidates are to sit for admission tests through prescribed rules and examination method as specified in the advertisement. Selection of the candidates will be done on merit basis as based on marks obtained in the admission test.

Despite the general merit in consideration for selection the reserved quota for different groups of applicants as specified in the advertisement shall be maintained on the merit basis for the respective reserved quota as well. Candidates selected for admission will have to appear before the Medical Boards as organized by the respective Institute of Health/ Medical Technology.

E. 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 10 years after admission in 1st year

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

1st Year

Teaching-learning both formative & summative assessment	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	
I	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

Teaching-learning both formative & summative assessment	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	
I	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	Chemistry of dental materials		100	150					250
	V	Oral and Dental Anatomy		100	200					300
		Total		370	450		17 days	25 days		820
		Grand total		820 hours			42 days			820 hours

3rd year

Teaching-learning both formative & summative assessment	Exams Papers	Subjects	Lecture (in hours)	Institutional Academic Lab based Practical Training/ Demonstration (in hours)	Formative Exam		Summative exam		Total Hours
					Preparator y leave	Exam time	Preparator y leave	Exam time	
I	Partial Dentures Prosthesis	100	150	7 days	10 days	10 days	15 days	250	
	Complete Dentures Prosthesis	100	150						
	Community Dentistry and Primary Dental Care	100	150						
	Total	300	450		17 days		25 days		750
	Grand total	750 hours			42 days				750 hours

4th Year

Teaching-learning both formative & summative	Exams Papers	Subjects	Lecture (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	
I	Drugs used in Dental Surgery	100	150	150	7 days	10 days	10 days	15 days	400	
	Applied Dental Prosthetic	100	150	150						
	Total	200	300	300		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 as per log book
5. Faculty members-
 - Subject oriented teacher (Professor/ Associate professor/ Assistant professor/Lecturer/Instructor will be eligible to perform lecture/theoretical class.
 - Subject oriented instructors will be eligible to perform practical/demonstration class.

G. Assessment

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

A. 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	Chemistry of dental materials	100	40	40	20	200
V	Oral and Dental Anatomy	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	Partial Dentures Prosthesis & Orthodontics.	100	40	40	20	200
II	Complete Dentures Prosthesis.	100	40	40	20	200
III	Community Dentistry and Primary Dental Care	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	Drugs used in Dental Surgery	100	40	40	20	200
II	Applied Dental Prosthetic	100	40	40	20	200
	<i>Special Lab Attachment</i>					
	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.	<p>Grammar:</p> <p>Articles :</p> <ul style="list-style-type: none"> ▪ Indefinite & definite articles <p>Tense:</p> <ul style="list-style-type: none"> ▪ Present, Past & Future tense <p>Voice :</p> <ul style="list-style-type: none"> ▪ Active voice ▪ Passive voice ▪ Voice change <p>Speeches:</p> <ul style="list-style-type: none"> ▪ Direct speeches ▪ Indirect speeches <p>Linkers</p> <ul style="list-style-type: none"> ▪ In addition ▪ Besides ▪ Moreover ▪ However ▪ Because ▪ Either or , neither nor <p>Idioms & Phrases :</p> <p>Subjects & predicate</p> <p>Parts of speech-</p> <ul style="list-style-type: none"> ▪ Noun & its classification ▪ Pronoun & its classification ▪ Adjective & its classification ▪ Verb-Adverb <p>Conjugation</p> <p>Preposition</p> <p>Punctuation (capitalization, fragment, end, comma, semi colon, colon, hyphen, underlining)</p> <p>Spelling</p> <p>Wrong words</p> <p>Translation (Bengali to English, English to Bengali), short story writing, technical description, comprehension.</p>	22	
	<p>Paragraph writing :</p> <p>Letter writing:</p> <p>Application writing:</p> <p>Report writing :</p>	10	
	Telegrams & E-mail:	2	

Course Contents of English (Part -II)**Marks = 25+25**

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Tutorial
	Communicative English : <ul style="list-style-type: none"> ▪ Reading skill ▪ Writing skill ▪ Listening skill ▪ Conversations skill 	4 4 4 4	8 8 8 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 Anatomy

Sl. No	Topics/Lessons	Teaching/learning Hours		
		Lecture	Tutorial	Practical/ Demonstration
1.	Introductory Anatomy : <ul style="list-style-type: none"> a) Anatomical Terminologies : <ul style="list-style-type: none"> i) Definition of Anatomy ii) Anterior, Posterior, superior, inferior, medial, lateral & median plane. b) <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> ▪ component ▪ Types of bones & joints ▪ short description of important bones 	10	10	05
3.	Cardio-vascular system. <ul style="list-style-type: none"> ▪ Location & Basic structure of cardiovascular system ▪ Short description of heart, major arteries, capillaries/veins 	10	05	10
4.	Respiratory system <ul style="list-style-type: none"> ▪ 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/SOE-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 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/SOE-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/ Lathyrysm 	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/SOE-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 <p>Opening, creating and saving a document, locating files, copying contents in some different file (s), protecting files, Giving password protection for a file</p> ▪ Page set up : <p>Setting margins, tab setting, ruler, indenting</p> ▪ Editing a document : <p>Entering text, Cut, copy, paste using tool-bars</p> ▪ Formatting a document : <p>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</p> ▪ 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 tolls ▪ Tables and Borders <p>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</p> ▪ 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 envelops ▪ 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=	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 তত্ত্বায়	Teaching/Learning Hours	
		Lecture	Practical
১।	বলবিদ্যা ও পদার্থের ধর্ম : <ul style="list-style-type: none"> ➢ সরল রেখার গতি, গতির সমীকরণ, নিউটনের গতির সূত্র ত্বরণ ও বল, খাত বল, ডেকটর 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 ➢ আকর্মিকিসের সূত্র ও তার প্রয়োগ আপেক্ষিক গুরুত্ব নির্ণয়। 	০৮ ঘন্টা	
২।	তাপ : তাপমিতি, তাপের একক, আপেক্ষিক তাপ, তাপীয় ক্ষমতা পানিসমাও সুষ্ঠুতাপ এবং ইহাদের নির্ণয় পদ্ধতিঃ সরলায় পদ্ধতিতে তাপের পরিবাহিতা নির্ণয়।	৫ ঘন্টা	
৩।	শব্দ : <ul style="list-style-type: none"> ➢ শব্দের উৎপত্তি ও শব্দ সালন, আড় তরঙ্গ ও দীঘল তরঙ্গ শব্দের ব্যভিচার ও বীট। বীটের সাহায্যে কম্পন সংখ্যা নির্ণয়। ➢ শব্দের বেগ নির্ণয়। ➢ টানা তারের আড় কম্পন, সূন্দের প্রমাণ। 	৫ ঘন্টা	
৪।	আলোক : <ul style="list-style-type: none"> ➢ গোলীয় পৃষ্ঠে প্রতিফলন। ➢ সমতল ও গোলীয় পৃষ্ঠে প্রতিফলন। সম্পূর্ণ প্রতিফলন, প্রতিসরাংক, প্রিজম প্রতিসারণ। ➢ লেসেং উত্তল ও অবতল লেস। লেসের শক্তি ও বিবর্ধন লেস সংযোজন। চোখের ত্রাণ সমূহ ও প্রতিকার। ➢ আলোক যন্ত্র-মাইক্রোকোপ। 	৫ ঘন্টা	

৫।	<p>চুম্বক :</p> <ul style="list-style-type: none"> ➢ চুম্বকনের বিভিন্ন পদ্ধতিঃ চুম্বকের মতবাদ, চুম্বকের ফেন্ট্রো ও প্রবাল্য। বিপরীত বর্গীয় সূত্র প্রাত্মুখী ও প্রস্থমুখী অবস্থানে চুম্বকের প্রাবল্য। বিক্ষেপী চুম্বকমান যন্ত্র ও ইহার ব্যবহার। ➢ ভুচুম্বকত্ব। 	৪ ঘন্টা	
৬।	<p>তড়িৎ :</p> <ul style="list-style-type: none"> ➢ ছুরি তারিং, চার্জের অন্তিম ও প্রাকৃতি নির্ণয়। বৈদ্যুতিক আবেশ, কুলম্বের সূত্র, ধারকত্ব, তড়িৎ বিভব। সমাত্তরাল পাত ধারক। ➢ বিদ্যুৎ কোষ, তাদের কেন্দ্রে উৎপন্ন চুম্বকফেন্ট্রো। বিদ্যুৎ প্রবাহ ও চার্জের একক। ➢ ওহমের সূত্র, বিভব বৈষম্যের একক। রোধ ও আপেক্ষিক রোধ, রোধের একক, রোধ সংযোজন, এমিটার, ভোল্ট মিটার। ➢ বৈদ্যুতিক পরিমাপ, হাইট স্টোম 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	৮০	

Sl.No	Topic/Lessons	Teaching/Learning Hours	
		Lecture	Practical
৭।	<p>১। শাইড ক্যালিপার্স, ক্লুজ ও সেপেরোমিটারের ব্যবহার শিক্ষা। ২। পানি অপেক্ষা হালকা/ভারি তরল ও কঠিন পদার্থের হাইডো-স্টেটিক ব্যালেন্স, নিকলসন হাইড্রোমিটার ও আঃ হাইড্রো বোতলের সাহায্যে আপেক্ষিক গুরুত্ব নির্ণয়। ৩। সরল দোলকের সাহায্যে জি এর মান নির্ণয়। ৪। একটি ক্যালিপার্সিটারের সাহায্যে পানিসম নির্ণয়। ৫। কঠিন ও তরলের আপেক্ষিক তাপ নির্ণয়। ৬। অবতল দর্পনের ফোকাস দূরত্ব নির্ণয়। ৭। প্যারালাক্স পদ্ধতিতে উক্তল লেপ ফোকাস দূরত্ব নির্ণয়। ৮। একখানা কাচ ফলকের প্রতিসরাংক নির্ণয়। ৯। ওহমের সূত্রের সত্যতা নির্ণয়। ১০। যে কোন দৈর্ঘ্যের তারে আপেক্ষিক রোধ নির্ণয়। ১১। নাল পদ্ধতিতে দুইখানা দুই চুম্বকের চৌম্বক আমকের তুলনা।</p>		<p>৩ ঘন্টা</p> <p>৩ ঘন্টা</p> <p>৩ ঘন্টা</p> <p>২ ঘন্টা</p> <p>৩ ঘন্টা</p> <p>২ ঘন্টা</p> <p>২ ঘন্টা</p> <p>৩ ঘন্টা</p> <p>৩ ঘন্টা</p> <p>৩ ঘন্টা</p> <p>৩ ঘন্টা</p>
	মোট ৪ ৭০ ঘন্টা	৮০	৩০

মান বন্টন ৪ তত্ত্বীয় = ৬০

১। পদার্থের সাধারণ ধর্ম, আলোক ও তড়িৎ প্রতিটি শাখা থেকে ৮ নম্বরের দুটি ও ৪ নম্বরের টি 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 চুম্বকত্বঃ 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 ৪ 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
	গ্রন্থ -ক ভৌত রসায়ন		
	১। ভৌত ও রাসায়নিক পরিবর্তন ও এদের মধ্যে পার্থক্য। ২। পদার্থের গঠনঃ অণু ও পরমাণু-অণুর সংজ্ঞা, আন্তঃআণবিক দুরত্ব, আন্তঃআণবিক, কঠিন, তরল, গ্যাস, পরমাণু, পারমাণবিক ও আণবিক ওজন। ৩। সাধারণ পরীক্ষাগার প্রণালীঃ দ্রবণ, অভিস্রবণ, পরিস্রাবণ ও অতিপৃক্ত দ্রবণ, দ্রাব্যতা, বাল্পীভবন, পাতন, আংশিক পাতন, উর্ধ্বপাতন, কেলাসন। ৪। প্রতীক, সংকেতও প্রতীক, আনবিক সংকেত, যোজ্যতা, রেডিক্যাল এবং তাদের যোজনী, যোজনী থেকে আনবিক সংকেত নির্ণয়, গাঠনিক সংকেত। ৫। রাসায়নিক বিক্রিয়াঃ বিভিন্ন প্রকারের রাসায়নিক ক্রিয়া, রাসায়নিক বিক্রিয়া ঘটানোর উপায় সমূহ। ৬। অক্স, ক্ষারক ও লবন। ৭। গ্যাসের ধর্ম-বয়েলের সূত্র, চার্লসের সূত্র। ৮। মৌলের রাসায়নিক তুল্যাংক বা যোজন ভার। ৯। পরমাণুর গঠন এবং যোজ্যতার ইলেক্ট্রনীয় মতবাদ। বিভিন্ন রাসায়নিক বন্ধন। ১০। ক) এভোগ্যাংকে সূত্র খ) ভরক্রিয়া সূত্র। ১১। রাসায়নিক সংযোগ বিধি: ক) ভরের নিয়তা সূত্র। খ) নির্দিষ্ট অনুপাত সূত্র। গ) গুনানুপাত বিধি। ঘ) বিপরীত অনুপাত সূত্র। ঙ) গ্যাস আয়তন সূত্র।	১ ঘন্টা ৫ ঘন্টা ৮ ঘন্টা ৮ ঘন্টা ৮ ঘন্টা ৮ ঘন্টা ২ ঘন্টা ২ ঘন্টা ২ ঘন্টা ৮ ঘন্টা ২ ঘন্টা ৫ ঘন্টা	
	গ্রন্থ -খ অধ্যাত্ম :		

Sl.No	Topic/Lessons	Teaching/Learning Hours	
		Lecture	Practical
	<p>১। নিম্নোক্ত পদার্থ গুলোর উৎস, প্রস্তুতি, ধর্ম এবং ব্যবহারঃ</p> <p>ক) অক্সিজেন, ওজেন, পানি ও হাইড্রোজেন পার অক্সাইড।</p> <p>খ) হেলাজেন সমূহ : ক্লোরিন, রোমিন, আয়োডিন ও হাইড্রো ক্লোরিক এসিড।</p> <p>গ) নাইট্রোজেন, হাইড্রোজেন সালফাইট, সালফার ডাইঅক্সাইড।</p> <p>ঘ) সালফার, হাইড্রোজেন সালফাইট, সালফার ডাইঅক্সাইড, সালফিউরিক এসিড।</p> <p>ঙ) ফসফরাস চ) জারন-বিজারনঃ জারক ও বিজারক পদার্থ</p> <p>২। ধাতুঃ নিম্নোক্ত পদার্থ গুলোর উৎস, প্রস্তুতি, ধর্ম এবং ব্যবহারঃ</p> <p>ক) সোডিয়াম-সোডিয়াম হাইড্রোঅক্সাইড, সোডিয়াম কার্বনেট, সোডিয়াম ক্লোরাইড।</p> <p>খ) ক্যালসিয়াম-ক্যালসিয়াম কার্বনেট, ক্যালসিয়াম ক্লোরাইড, ক্যালসিয়াম সালফেট, বি-চিং পাউডার।</p> <p>৩। কপার-কপার অক্সাইড, কপার সালফেট, কপার ক্লোরাইড</p> <p>৪। জিংক - জিংক অক্সাইড, জিংক ক্লোরাইড, জিংক সালফেট।</p>	৭ ঘন্টা	
	<p>৫। এলুমিনিয়াম - এলুমিনিয়াম ক্লোরাইড, এলুনিয়াম সালফেট।</p> <p>৬। আয়রন - আয়রন সালফেট।</p> <p>৭। লেড - লেড অক্সাইড।</p> <p>৮। সিলভার - সিলভার নাইট্রেট।</p>	৬ ঘন্টা	
	এক্ষেত্রে গুরুত্বপূর্ণ বিষয় রসায়ন	১ ঘন্টা	
	<p>১। জৈব রসায়নের সংজ্ঞা, জৈব ও অজৈব যৌগের মধ্যে পার্থক্য জৈব যৌগের গঠন, শ্রেণী বিভাগ, কার্যকরী বা ক্রিয়াশীল মূলক।</p> <p>২। জৈব যৌগের নিষ্কাশন ও বিশুদ্ধকরণ</p> <p>৩। সম্প্রস্ত ও অসম্প্রস্ত হাইড্রোকার্বনঃ প্রস্তুত প্রণালী, ধর্ম এবং ব্যবহার -মিথেন, ইথেন, ইথিলিন, এসিটাইলিন।</p> <p>৪। এলকোহল হ্যালোজেন জাতকঃ মিথাইল ক্লোরোফর্ম এর প্রস্তুতি, ধর্ম ও ব্যবহার।</p> <p>৫। এলকোহলঃ শ্রেণী বিভাগ, মিথাইল এলকোহল, ইথানল এলকোহল ও গিসারিনের প্রস্তুতি, ধর্ম ও ব্যবহার।</p> <p>৬। ডাই-ইথাইল ইথাইল প্রস্তুতি, ধর্ম ও ব্যবহার।</p> <p>৭। এলডিহাইড ও কিটোল সমূহঃ নিলিখিত যৌগসমূহের প্রস্তুতি, ধর্ম ও ব্যবহার, ফরমালিডহাইড, এসিটালডিহাইড ও এসিটোন।</p> <p>৮। কাৰ্বলিক এসিডঃ এসেটিক এসিড ও সাইট্রেক এসিসেডের প্রস্তুতি, ধর্ম ও ব্যবহার।</p> <p>৯। এলকোহল এ্যামাইনঃ এ্যামাইনের শ্রেণী বিভাগ, মিথাইল এ্যামাইন ও ইথাইল এ্যামাইনের প্রস্তুতি, ধর্ম ও ব্যবহার।</p> <p>১০। এ্যারোমেটিক যৌগঃ নিম্নলিখিত যৌগসমূহের প্রস্তুতি, ধর্ম ও ব্যবহার। বেনজিন, টলুইন, ক্লোরোবেজিন নাইট্রোবেজিন, অ্যানিলিন, কাৰ্বলিক এসিড, বেনজালডিহাইড, বেনজোয়ারিক এসিড ও স্যালিসাইলিক এসিড।</p>	৪ ঘন্টা	
	ব্যবহারিক পদার্থ গুলোর উৎস, প্রস্তুতি, ধর্ম এবং ব্যবহারঃ	১ ঘন্টা	
	<p>১। অন্ম ও ক্ষারের মাত্রা নির্ণয়।</p> <p>২। হাইড্রোজেন ও অক্সিজেনের প্রস্তুতি।</p> <p>৩। সহজ জৈব ও অজৈব যৌগের আঙ্গিক বিশেষণ।</p>	২০ ঘন্টা	
	মোট : ১০০ ঘন্টা	৮০ ঘন্টা	২০ ঘন্টা

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

এক্ষেত্রে ক- ২০ নম্বর

এক্ষেত্রে খ - ২০ নম্বর

এক্ষেত্রে গ - ২০ নম্বর

এক্ষেত্রে ক থেকে ৩টি, এক্ষেত্রে খ থেকে ৩টি এবং এক্ষেত্রে গ থেকে ৩টি মোট ৯টি প্রশ্ন থাকবে। তন্মধ্যে প্রত্যোক এক্ষেত্রে এক্ষেত্রে অত্যন্তপক্ষে 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:

- demonstrate basic knowledge on common microbiological and parasitological issues.
- perform identification of different microorganisms particularly bacteria & fungus of medical importance ensuring laboratory safety using microbiological, reagents, equipment and apparatus.
- 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/SOE-40 marks, Formative-20 marks

Paper VI: Subject - Chemistry of Dental Materials

Total hours: 250 hours
Lecture : 100 hours
Practical : 150 hours

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

Objectives:

At the end of the course the students will acquire knowledge of definition, classification, composition, properties, uses and also performs manipulation of the following dental materials:

- impression and model materials.
- different dental waxes and separating media.
- denture base materials.
- filling materials (metallic/ non-metallic) used in dentistry
- dental porcelains.
- investment materials.
- metals and alloys used in dentistry such as gold, silver, chrome-cobalt, stainless steel.
- different soldering and casting materials used in dentistry.
- different dental cement
- various kind of restorative materials
- orthodontic appliance

List of Competencies:

The Students will be competent at the end of Course:-

- demonstrate knowledge about the role of laboratory in health care services and perform set up and organize a Dental laboratory at different levels.
- use of Personal protective equipment e.g- gloves, gowns, mask, face shields, apron.
- demonstrate knowledge about classification, Composition, Properties, uses and manipulation of different types of dental materials.
- manipulation of impression materials, Gypsum Product.
- application of separating media.
- uses of different types of dental wax.
- technique of Self care acrylic and heat cure acrylic resin.
- technique of manipulation different types of restorative materials.
- technique of different metals used in dentistry.

Course contents

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Practical/ Demonstration
	<p><i>Definition/ Classification/ Composition/ Manipulation/ Properties / Uses of :</i></p> <ol style="list-style-type: none"> 1. Impression materials 2. Gypsum product 3. Separating Media 4. Dental waxes 5. Dental base materials 6. Filling materials 7. Dental porcelain 8. Metallurgy 9. Solder and Fluxes 10. Soldering and welding 11. Alloys used in dentistry 12. Metals used in dentistry : Silver, Gold, Copper, Stainless steel, Chromic Cobalt 13. Amalgam : Silver and Copper 14. Investment material : Gypsum, Silica & Phosphate bonded investment 15. Casting and swaging: Definition, General principle, Defects of casting 	15 15 05 15 15 15 10 10 05 05 10 05 15 05 05	15 15 05 10 15 15 10 05 10 10 05 10 10 10
	Total =	150	150

Teaching Methods:

Lecture
Practical Demonstration

Media :

Multi media
Laptop
OHP
White Board
Marker
Laboratory
Clinical ward

Assessment:

Written – SAQ= 80 marks, MCQ=20 marks
Practical or OSPE 40 marks, Oral/SOE-40 marks, Formative-20 marks

Department of Dentistry
Institute of Health Technology.....
2nd Year

Class Performance Records: *Chemistry Of Dental Materials*

Sl. No	Topics/Lesson	Date	Marks obtained	Signature of the Teacher
1	Impression materials			
2	Gypsum product			
3	Dental waxes			
4	Separating Media			
5	Dental base materials			
6	Filling materials			
7	Solder, Fluxes, Soldering and welding			
8	Alloys & Amalgam used in dentistry			
9	Investment material			
10	Casting and swaging			
11	Dental Metallurgy			
	<i>Average marks secured 20% =</i>			

Paper V: Subject - Oral & Dental Anatomy

Total hours : 300 hours

Lecture : 100 hours

Practical : 200 hours

Total marks : 200

Written : 100

Oral : 40

Practical : 40

Formative : 20

Objectives:

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

1. Acquire the knowledge of oral anatomy, which includes the following
 - Able to identify different types of bones, muscles, nerves and vessels surrounding the Oro- facial muscles
2. Acquire the knowledge of dental anatomy, which includes the following
 - Able to identify histological structures and function of different tooth tissue and supporting structures.
 - State morphology, chronology of deciduous and permanent tooth in details.
3. Describe the normal occlusion, centric rotation, free-way space and natural and artificial teeth alignment.
4. State the blood supply and nerve supply of teeth and oral cavity.
5. **Enumerate eruption and shading time**

List of Competencies:

The Students will be competent at the end of Course:-

- The knowledge of morphology upper & lower anterior deciduous and permanent teeth.
- The knowledge of morphology upper & lower posterior deciduous and permanent teeth.
- Morphology of enamel, dentine, pulp, cementum.
- Identify the different types of bones, tooth tissue and supporting structures.
- Acquire knowledge of normal occlusion of alignment of teeth, centric occlusion, centric relation and free way space.

Course Contents:

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Practical/ Demonstration
A. Oral Anatomy			
1	<i>Bones of face: Maxilla and Mandible</i>	10	20
2	<i>Muscles of Mastication and Expression:</i> <input type="checkbox"/> Position, origin, insertion, blood supply, nerve supply and action	10	20
3	<i>Temporo-mandibular joint:</i> <input type="checkbox"/> General idea, muscle attachment, blood supply, nerve supply and movements	10	20
4	<i>Major Salivary :</i> <input type="checkbox"/> Definition, classification, location and function	10	20
B. Dental Anatomy			
5	<i>Deciduous and permanent teeth:</i> <input type="checkbox"/> Name/ parts/ morphology/ number/ function & time of eruption	10	20
6	<i>Histological structure of tooth tissue:</i> <input type="checkbox"/> Enamel/ dentin/ pulp/ cementum and periodontal ligament	10	20

7	<i>Morphology of tooth</i> □ Anterior segment/ Upper and lower – right and left segments	10	30
8	<i>Nerve and blood vessel of face, teeth and oral cavity</i>	10	20
10	<i>Mucous membrane of oral cavity</i>	10	15
11	<i>12 pairs of cranial nerves</i>	10	15
	Total=	100	200

Teaching Methods:

Lecture
Practical Demonstration

Media:

Multi media
Laptop
OHP
White Board
Marker
Laboratory
Clinical ward

Assessment:

Written – SAQ= 80 marks, MCQ=20 marks
Practical or OSPE 40 marks, Oral/SOE-40 marks, Formative-20 marks

3rd Year
Paper I: Subject - Partial Denture Prosthesis & Orthodontics

Total hours: 250 hours

Lecture : 100 hours

Practical: 150 hours

Total marks : 200

Written : 100

Oral & Practical : 40+40

Formative : 20

Objectives: A)

At the end of the course of *Partial Denture Prosthesis* the students should be able to :

- State the classification of partial denture with its different components.
- Perform the technique of taking impression for partial dentures, inlays, crowns, bridge work etc.
- Construct partial denture, inlays, crowns, bridges and immediate denture.
- Perform pattern making, flasking, dewaxing, packing, deflasking, grinding and polishing of partial denture, crown, bridge, inlay and immediate denture.
- Do cementing of inlays, crowns, bridge work properly.
- Learn about basic dental implants

Objectives: B)

- At the end of the course of *Orthodontics* the students should be able to :
- Definition, Aims, Objects and scope of orthodontics.
- Describe growth and development of jaws, teeth, face and skull.
- Narrate normal occlusion and its characteristics, factors responsible for establishment and maintenance of normal occlusion.
- Discuss soft tissue morphology and behavior.
- Describe malocclusion, mention types-Arch and skeleton, classifications.
- Describe orthodontic appliances- Removable and Fixed appliances.
- Narrate retention and relapse
- Describe fixed and removable retainer

List of Competencies:

- The Students will be competent at the end of Course:-
- Introduction and objectives of partial denture.
- Examination and diagnosis.
- Classification of removable partial denture.
- Technique of method of taking impression.
- Selection of impression tray metallic & nonmetallic.
- Making model/cast and base the model.
- Construction of wire/clasps.
- Wax Pattern.
- Alignment of artificial teeth.
- Articulation of model.
- Technique of flasking dewaxing, packing, curing.
- Deflasking, Trimming, polishing and supply of PD.
- Relining of partial denture.
- Repair of removable partial denture.
- Construction of removable orthodontic appliance-model, clasp, springs.

Course Contents:

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Practical/ Demonstration
1	<i>Definitions:</i> □ Removable and fixed partial denture/ Abutment support bracing / Retention/ Reciprocation/ Direct & indirect retainers etc	10	10
2	<i>Classification and parts of partial denture</i>	05	05
3	<i>Differences between partial denture, immediate denture, inlay, crown and bridge works.</i>	05	05
4	<i>Clasp: Types and requirements of clasp and technique.</i>	05	05
5	<i>Operating dental units:</i> □ Motivation of patient and technique of sitting the patient	05	05
6	<i>Impression:</i> □ Definition/ Types/ Care/ Technique of taking impression	10	10
7	<i>Boxing of impression and making a cast</i>	10	10
8	<i>Methods of making base plate and occlusal rims</i>	05	10
9	<i>Technique of surveying & designing of the denture</i>	05	10
10	<i>Technique of articulation in an articulator</i>	05	10
11	<i>Definition, designing and technique of Master cast.</i>	05	10
12	<i>Wax pattern</i> □ Attachment of teeth/ flasking/ dewaxing/ packing/ curing/ deflasking/ grinding/ finishing & polishing	05	10
13	<i>Immediate denture:</i> □ Definition/ Indication/ Contraindication/ Advantage/ Disadvantage & Technique of Immediate denture	05	10
14	<i>Inlay, crown & bridge works:</i> □ Definition/ Indication/ Contraindication/ Advantage/ Disadvantage etc of Inlay, crown & bridge works	05	10
15	<i>Techniques of Inlay, crown & bridge works.</i>	05	10
16	<i>Relining, rebasing, and repairing of partial denture.</i>	05	10
17	<i>Removable appliances of Orthodontics</i>	05	10
		Total =	100
			150

Teaching Methods:

Lecture
Practical Demonstration

Media :

Multi media
Laptop
OHP
White Board
Marker
Laboratory
Clinical ward

Assessment :

Written – SAQ= 80 marks, MCQ=20 marks
Practical or OSPE 40 marks, Oral/SOE-40 marks, Formative-20 marks

Department of Dentistry
Institute of Health Technology.....

Class Performance Records: *Technique of Partial Denture Prosthesis*

Sl. No	Topics/Lesson	Date	Marks obtained	Signature of the Teacher
1	Partial denture: Definition, Classification and description of parts			
2	Clasp: Types and requirements			
3	Impression for partial denture			
4	Surveying of partial denture			
5	Wax patterns for partial denture			
6	Articulation			
7	Selection & alignment of artificial teeth			
8	Flasking, dewaxing, packing and curing of partial denture			
9	Immediate denture			
10	Inlay, crown and bridge			
11	Repairing, relining and rebasing			
	<i>Average marks secured 20% =</i>			

Paper II: Subject - Complete Denture Prosthesis

Total hours: 250 hours

Lecture : 100 hours

Practical: 150 hours

Total marks : 200

Written: 100

Oral & Practical : 80

Formative: 20

Objectives:

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

- State the classification of complete denture with its different components.
- Construct a complete denture.
- Construct diagnostic cast with base, special trays, occlusal rims & articulation of models.
- Select and align artificial teeth and the art and technique of curving of complete denture.
- Perform flasking, dewaxing, packing, curing and deflasking, smoothening and polishing of complete denture.
- Repair, relining and rebasing of complete denture.
- Describe orthodontic appliances and their components immediate denture.
- Construct orthodontic appliances.

List of Competencies:

The Students will be competent at the end of Course:-

- Patient history taken.
- Selection of Impression tray.
- Impression of primary & final.
- Construction of model or cast of primary, final or working model.
- Construction of base of the model.
- Construction of special tray.
- Construction of occlusal rim.
- Articulation of cast.
- Selection of artificial teeth.
- Alignment of teeth.
- Trial of Complete dental.
- Flasking, dewaxing, packing, curing, trimming, polishing and supply of denture.
- Repairing, Relining and rebasing of denture.
- Construction of Immediate denture.

Course Contents:

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Practical/ Demonstration
1	<i>Complete denture:</i> Definition and description of parts of complete denture, indication, contraindication, advantage and disadvantage	10	10
2	<i>Method of taking impression</i>	05	10
3	<i>Construction of primary model(cast)</i>	05	10
4	<i>Technique of construction of base plate for model and other base plates</i>	05	10
5	<i>Construction of occlusal rims with all components</i>	05	10
6	<input checked="" type="checkbox"/> <i>Definition and importance of : Articulation/ occlusal rim/ centric occlusion/ free way space/ occlusalplane/ high lip line/ low lip line/ canine etc</i>	10	10

7	<i>Technique of articulation</i>	05	10
8	<i>Selection of artificial teeth</i>	05	-
9	<i>Alignment of teeth:</i> <input type="checkbox"/> Normal alignment in centric occlusion <input type="checkbox"/> Alignment in cross bite case <input type="checkbox"/> Arch of different face form	05	10
10	<i>Curving: Technique and finishing</i>	05	10
11	<input type="checkbox"/> Technique of flasking, dewaxing, packing and curing of complete denture <input type="checkbox"/> Technique of overcoming porosity during the procedure	05	10
12	<i>Grinding, trimming & polishing of complete denture</i>	05	10
13	<i>Complains of complete denture</i>	05	05
14	<i>Repairing, relining & rebasing of complete denture</i>	05	10
15	<i>Complete denture with metallic base in detail</i>	05	05
16	<i>Orthodontic appliances:</i> Definition, classification, components, indication, contraindication, advantage and disadvantage	05	05
17	<i>Technique of making orthodontic appliances</i>	05	10
18	<i>Abutments:</i> Definition, indication, contraindication, advantage, disadvantage & techniques	05	05
	Total =	100	150

Teaching Methods :

Lecture
 Practical Demonstration

Media :

Multi media
 Laptop
 OHP
 White Board
 Marker
 Laboratory
 Clinical ward

Assessment :

Written – SAQ= 80 marks, MCQ=20 marks
 Practical or OSPE 40 marks, Oral/SOE-40 marks, Formative-20 marks

Department of Dentistry
Institute of Health Technology.....

Class Performance Records: Technique of Complete Denture Prosthesis

Sl. No	Topics/Lesson	Date	Marks obtained	Signature of the Teacher
1	Complete denture: Definition, Classification and description of parts			
2	Impression for partial denture			
3	Models and temporary trays			
4	Wax patterns and wax rims			
5	Articulation of complete denture			
6	Alignment for complete denture			
7	Flasking, dewaxing, packing and curing of complete denture			
8	Grinding, trimming, polishing of complete denture			
9	Repairing, relining and rebasing			
10	Orthodontic appliances			
11	Obturators			
	<i>Average marks secured 20% =</i>			

Department of Dentistry
Institute of Health Technology.....

Class Performance Records: *Introduction to Oral & Dental Anatomy*

Sl. No	Topics/Lesson	Date	Marks obtained	Signature of the Teacher
1	Maxilla and mandible			
2	Muscles of mastication and expression			
3	Tempero- mandibular joint			
4	Major salivary glands			
5	Deciduous and permanent teeth			
6	Tooth tissue			
7	Morphology of tooth: Anterior segment/ Upper and lower – right and left segments			
8	Nerve and blood supply of face and oral cavity			
9	Mucous membrane of oral cavity			
10	Twelve pairs of cranial nerves			
	<i>Average marks secured 20% =</i>			

Paper III: Subject - Community Dentistry and Primary Dental Care

Total hours: 250 hours

Lecture: 100 hours

Practical: 150 hours

Total marks: 200

Written : 100

Oral & Practical : 40+40

Formative: 20

Objectives:

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

- Describe concept of Community health medicine.
- Define health, diseases, health education philosophy & principles of Health education Importance, methods, media of community health education, Methods of motivation & communication.
- Mention Primary health care, principles and components of primary health care.
- Describe personal hygiene, oral hygiene, essential of healthful living.
- Narrate food & nutrition, general effect of malnutrition, role of dietary habit on oral health.
- Discuss primary oral health care - its objects and methods of tooth brushing, flossing, tongue cleaning
- Mention dental plaque, effect of dental plaque on caries & periodontal diseases.
- Demonstrate methods of plaque control methods or tooth brushing, proper use of dental floss Tooth picks etc. Use of mouth rinsing & gum massage.
- List the etiologies of dental caries, prevention o dental cares with fluoride improvement of resistance of tooth , different use of fluoride, fissure sealing etc. Fluoridate of water supply necessity & methods.
- Describe prevention o periodontal disease and dental caries -individual and mass level.
- Narrate dental epidemiology, definition of Bio-statistics its methods, importance and Application in oral health care, Preparation of statistical charts, graphs, tables reports etc.
- Conduct survey of dental diseases, motivation provides dental health education emergency treatment.
- Describe school health program dental care for school children.
- Discuss parent counseling & child behavior.

List of Competencies:

The Students will be competent at the end of Course:-

- Community health care and prevention of oral disease education.
- Oral communicable and non communicable diseases prevention.
- Prevention and treatment of common oral diseases.
- Under take minor dental surgery such as sealing, polishing, dressing, simple endodontics treatment and management of periodontal diseases.
- Technique of different types of restorative treatment and management.
- Acquire knowledge about ART (Atramic restorative treatment).
- Placement of gingival pack.
- Application of Caries and plaque preventing agents.
- Recording patient history.
- Management of handicapped children.
- Management of Pulpotomy, Pulpectomy and pulpcaping.
- Survey of oral and dental diseases.
- Technique of tooth brushing, proper use of dental floss, tooth picks, use of mouth rinsing and gum message.

Course Contents:

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Practical/ Demonstration
1	<i>Concept of children dentistry and community dentistry</i>	05	05
2	<i>Dental cavities, diagnosis and management</i>	10	10
3	<i>Prevalence, etiology, Classification and management of periodontal diseases</i>	05	10
4	<i>Dental health education</i> □ Definition and role of dental health education □ Philosophy/ principles/ media of community health education	05	10
5	<i>Definition of personal hygiene and essential of healthful living</i>	05	10
6	<i>Prevention of common oral diseases in school children and community</i>	05	10
7	<i>Concept of food, nutrition and role of dietary habit on oral health</i>	05	10
8	<i>Primary oral health care/ Method of both brushing and other oral hygiene</i>	05	10
9	<i>Dental plaque and plaque control/ effect of plaque on caries and periodontal diseases</i>	05	10
10	<i>Dental Calculus: Types and distribution of calculus/ Scaling and polishing</i>	10	10
11	<i>Root Canal treatment:</i> □ Improvement of resistance of tooth by fluoride □ Prophylactic odontectomy □ Definition, indication, contraindication, instruments and complications of root canal treatment	10	20
12	<i>Methods of motivation and communication</i>	05	05
13	<i>Manipulation of temporary and permanent filling materials for deciduous and permanent teeth and cementing materials</i>	10	10
14	<i>Survey of oral and dental diseases in a community</i>	10	10
15	<i>Dental radiography: Classification/ dental film/ technique/ development and processing of film</i>	05	10
	Total =	100	150

Teaching Methods :

Lecture
Practical Demonstration

Media :

Multi media
Laptop
OHP
White Board
Marker
Laboratory
Clinical ward

Assessment :

Written – SAQ= 80 marks, MCQ=20 marks
Practical or OSPE- 40 marks, Oral/SOE-40 marks, Formative-20 marks

Department of Dentistry
Institute of Health Technology,.....

Class Performance Records: *Community Dentistry and Primary Dental Care*

Sl. No	Topics/Lesson	Date	Marks obtained	Signature of the Teacher
1	Concept of children dentistry and community dentistry			
2	Periodontal diseases			
3	Caries			
4	Dental plaque and calculus			
5	Primary oral health care			
6	Scaling and polishing			
7	Survey of oral and dental diseases in community			
8	Methods of motivation and communication of Primary Oral Health Care			
9	Manipulation of dental materials			
10	Dental radiography			
	<i>Average marks secured 20% =</i>			

4th Year
Paper I: Subject – Drugs used in Dental Surgery

Total hours : 400 hours

Lecture : 100 hours

Practical : 150 hours

Special Lab Attachment: 150

Total marks : 200

Written : 100

Oral & Practical : 80

Formative : 20

Objectives:

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

- Acquire the knowledge of common oral cavity microorganisms and their behaviors.
- Sterilize and disinfect different dental instruments and equipments.
- Identify different dental instruments, their maintenance and use in surgery room and laboratory room.
- Acquire the knowledge of management of shock and other emergency problems like bleeding after extraction.
- Perform chair side assistance.
- Perform record keeping/ stock-ledger/ registration of the patient.
- Acquire knowledge about different drugs and medicaments used in dentistry and shelf-life of drugs and medicaments.
- Advice the patient after any surgical procedure and dispense of drugs and medicaments.
- Acquire knowledge about local anaesthesia, restorative materials, cements, hemostatic agents, obtundents, astringents.

List of Competencies:

The Students will be competent at the end of Course:-

- Properly arrangement of sterilization.
- Technique of seating of patient.
- Management of operating room, adjusting the dental chair, care of the patient.
- Technique of post operation care after extraction.
- Technique of infiltration of local anesthesia and nerve block of local anesthesia.
- Assisting the operator at the chair side.
- Patient appointment and reception.
- Assist to major oral surgery.
- Topical application of local analgesic agents.
- Under take first aid dental treatment and do minor tooth extraction such as extraction of minor and deciduous teeth and advice on taking necessary medicine for the above purpose.
- Perform record keeping/stock ledger/registration of the patient.
- Advice the patient after any surgical procedure and dispense of drugs and medicaments.

Course Contents:

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Practical/ Demonstration
1	<i>Common oral micro organisms:</i> <input type="checkbox"/> Classification, morphology and pathogenesis	10	15
2	<i>Sterilization and disinfection:</i> <input type="checkbox"/> Definition/ classification/ method and technique of sterilizing different dental instruments and equipments	10	10
3	<i>Instruments used for extraction, apisectomy, cyst operation, impacted tooth operation & surgical preparation for dentures</i>	10	15
4	<i>Instruments used for laboratory work</i>	05	10

5	<i>Management of post extraction complications:</i> <input type="checkbox"/> Shock: Definition, classification, management, <input type="checkbox"/> Bleeding: Causes, management	10	15
6	<input type="checkbox"/> Indication, contraindication, complication and advice after extraction <input type="checkbox"/> Preparation and application of dressing	10	20
7	<i>Operating dental units and technique of sitting the patient</i>	10	15
8	<i>Method of record keeping, indent, stock-ledger, registration of the patient, breakage and missing instruments</i>	10	10
9	<i>Drugs used in dentistry:</i> <input type="checkbox"/> Concept/ classification/ indication/ contra-indication <input type="checkbox"/> Preparation/ collection/ presentation/ manufacturing/ expiry date	10	15
10	<i>Anesthesia in dental surgery:</i> <input type="checkbox"/> Local and general anesthesia: Application/ indication/ complication/ management of local anaesthesia	10	15
11	<i>Common diseases encountered in dentistry:</i> <input type="checkbox"/> Concept of general condition of the patient: Hypertension/ Diabetes/ blood dyscrasiasis/ hepatitis/ AIDS etc	05	10
	Total	100	150

Teaching Methods:

- Lecture
- Practical Demonstration

Media:

- Multi media
- Laptop
- OHP
- White Board
- Marker
- Laboratory
- Clinical ward

Assessment:

- Written – SAQ= 80 marks, MCQ=20 marks
- Practical or OSPE- 40 marks, Oral/SOE-40 marks, Formative-20 marks

Department of Dentistry
Institute of Health Technology.....

Class Performance Records: *Introduction to Drugs Used in Dental Surgery and Dental Surgery Assistance*

Sl. No	Topics/Lesson	Date	Marks obtained	Signature of the Teacher
1	Micro-organism			
2	Sterilization and disinfection			
3	Instruments used for surgical purposes			
4	Laboratory instruments and equipments			
5	Management of shock and bleeding			
6	Operating dental units and techniques of setting the patient			
7	Drugs used in dentistry			
8	Anesthesia			
9	Concept on general condition of the patient			
	<i>Average marks secured 20% =</i>			

Paper II: Subject - Applied Dental Prostheses

Total hours : 400 hours

Lecture : 100 hours

Practical : 150 hours

Special Lab Attachment: 150

Total marks : 200

Written : 100

Oral & Practical : 80

Formative : 20

Objectives:

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

- Construct a partial denture
- Construct a complete denture.
- Construct an immediate denture.
- Construct inlay, crown and bridge prosthesis
- Construct obturators.
- Repair, rebase and reline all types of dental prosthesis.
- Take impression for dental implants

List of Competencies:

The Students will be competent at the end of Course:-

- Proper maintenance of dental laboratory room.
- Proper maintenance of equipments, instruments and other essentials of dental laboratory.
- In laboratory and clinic-Take impression and construction dentures and other dental appliances such as
 - Prepare prosthetic appliance - models, wax pattern, articulating, alignment, flasking, curing,
- polishing, finishing & supply.
 - Proper orthodontic appliances- model, clasps and different springs.
- Procedure for casting of crown, bridge, inlay, onlay and metallic denture.
- Procedure for repair denture, relining and rebasing of denture.
- Construction of immediate denture.
- Construction of obturators.

Course Contents:

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Practical/ Demonstration
1	Impressions, models, surveying and technique of partial denture	15	20
2	Impressions, models, surveying and technique of complete denture	15	20
3	Impressions, models, surveying and technique of immediate denture	15	20
4	Impressions, models, surveying and technique of inlays, crown and bridge works	15	30
5	Impressions, models, surveying and technique of orthodontic appliances	15	30
6	Impressions, models, surveying and technique of obturator	15	10
7	Repairing, relining and rebasing of dentures	10	20
	Total = 250	100	150

Teaching Methods :

Lecture
Practical Demonstration

Media :

Multi media
Laptop
OHP
White Board
Marker
Laboratory
Clinical ward

Assessment :

Written – SAQ= 80 marks, MCQ=20 marks
Practical or OSPE- 40 marks, Oral/SOE-40 marks, Formative-20 marks

Department of Dentistry
Institute of Health Technology.....

Class Performance Records: *Applied Dental Prostheses*

Sl. No	Topics/Lesson	Date	Marks obtained	Signature of the Teacher
1	Presentation of 5 partial denture			
2	Presentation of 1 complete denture alignment			
3	Presentation of 2 immediate denture			
4	Presentation of 2 obturator			
5	Presentation of porcelain crown or bridge			
6	Presentation of metallic crown or bridge			
	<i>Average marks secured 20% =</i>			

Outline of Institutional Academic Laboratory

A. The flowing equipments, instruments and materials for the institutional academic laboratory will be there

1. Well organized dental units and chairs
2. Basic instruments for dental examination eg. Dental mouth minor, dental probe, twizer, instrument tray (kidney tray)
3. Basic instruments for dental extraction eg. Dental forceps, Elevators cartige syringe ,tissue forceps etc.
4. Basic instruments for minor dental surgery such as scissors, needle and needle holder etc.
5. Basic instruments for conservative (tooth filling) and endodontic purpose:- eg –mirror, probe, excavator, twizer, lifter, plager, amalgam gun ,different types of dental diamond burs instruments tray, tarbine and micromotore hand pieces
6. Basic instruments for children: tooth extraction eg- children dental tooth forceps, elevators
7. Dental prosthetics instruments: - Different types of impression trays, rabur bowels, plaster spatula, wax knife, wax curber, dental flask, press, burner, different types of machine for casting of crown, bridge inlay, onlay and metallic dentures etc.

With all types of dental materials for the above purpose

Outline of Special Laboratory Attachment

B. Special training facilities for the 4th year students :

1. Well organized different dental departments :-

- Dental prosthetic department
- Orthodontics department
- Children department
- Conservative and endodontic department
- Oral and maxillofacial surgery department etc.

2. With all institutional academic dental departmental facilities

3. Different types of dental x-ray machine

- OPG
- RVG
- Protable/ ? portable dental X-ray machine

Job description of Diploma Dental Technologist

A. General Job

1. Safety of the dental technologist:
 - Dental Technologists should be properly immunized.
 - Must have proper and protective dress and knowledge about personal protection.
 - Properly labeling of the high-risk specimens.
 - Appropriate maintenance of own hygiene after handling of each patient.
2. Safety of the patient
 - Maintain safety measures in every individual procedure.
 - Arrangements of First Aid measure for emergency situations and complications.
3. Proper maintenance of departmental records
 - Preparation of indents
 - maintenance of stock ledger for equipment, instrument and also record of materials
 - Maintenance of breakage/ missing records and reports on any defects, disorders of instruments and equipments, check expiry dates of medicine and materials from time to time.
4. Proper maintenance of laboratory and surgery room
5. Supervision and training of junior colleagues.
6. Perform the duties assigned by the superior officers and seniors related to job description.
7. Commitment to the patient
 - Should be well behaved to the patients and attendants.
 - Explain procedures and consequences to the patients and their attendants.
 - Motivation and counseling where and when needed.
 - Consent of the patient and attendant where needed.
 - Maintain privacy of the patient.

B. Specific Jobs

1. Proper registration of the patient in details
 - Name, age, sex, religion
 - Occupation, address
 - Present problem
 - Past problem if any
2. Maintenance of all dental equipment, instruments, materials such as
 - Dental extraction sets, Scaling sets
 - Minor oral surgery sets
 - Equipment for oral surgery
 - Dental chair
 - Linens
 - Sterilization
3. Maintenance of stock ledger for equipment, instruments & materials and proper inventory time to time of the stock.
4. Maintain all departmental records such as
 - Register, Dental X-ray
 - Dental appliances
 - Treatment records

5. Prepare indents.
6. Provide oral health education and motivate the patients. Give pre and postoperative care to the patient if necessary:
 - Pre-operative care
 - Assure the patient
 - Check whether the patient has taken medicine before operation as advised by the dental surgeon
 - Check oral hygiene (Betel nut, chewing tobacco dust)
 - Pre-operative care
 - Keep the cotton in mouth for 30-60 minutes
 - Take soft and liquid diet
 - Do not gargle or rinse for 24 hours

In case of all other major oral surgery post operative care should be taken.

7. Give chair side assistance to the dental surgeon during surgery or operation when called for such as
 - Placing the patient properly
 - Take protective measures for the patient
 - supply sterilized instruments
 - Proper use of the sucker and saliva suction
 - Ready the instrument tray
 - Prepare the operation field
 - After surgery remove the disposable & prepare the field for next surgery.
8. Supervision of junior colleagues.
9. In laboratory & Clinic – Take impression & construct dentures and other dental appliances such as
 - Prepare prosthodontic appliances- Models, Wax pattern, Fluxing, Curing
 - Prepare orthodontic appliances- Models, Clasp, Z & Finger springs
10. Proper maintenance of laboratory room, surgery room and sterilize instruments, cotton, gauze and other essentials.
11. Maintain patients' appointment diary.
12. Undertake minor dental surgery such as polishing,, scaling, dressing, simple cement filling & simple Endodontics Treatment..
13. Acquire knowledge about manipulation of different types of filling materials – Anterior filling materials, Alloys and Lining materials.
14. Acquire knowledge about how to manipulate different types of impression materials.
15. First aid dental treatment and minor tooth extraction such as extraction of loose & deciduous teeth under surface anesthesia & advice necessary medicine for the same purpose .
16. Acquire knowledge about technical support to
 - ART(Atraumatic restorative treatment)
 - Application of fissure sealants
 - Diet counseling
 - Topical application of fluorides
 - Computer program and other educational aids
 - Update knowledge about latest dental units & other modern appliances

17. Acquire skills on

- laboratory procedure for casting of crown, bridge, inlay, onlay and metallic partial denture
- Dental health education for individual and community people
- Demonstration of oral hygiene like maintenance by brushing, flossing on models/ life models
- Chair side assistance during medically compromised patient's management i.e. physically handicapped and mentally retarded
- Handle non co-operative children patients
- Assist Dental Radiologist in Dental Radiology department if called for
- Assist Oral Pathologist in the oral Histopathology and Oral Microbiology department if called for

C. Job At the Teaching Institutes:

At the teaching Institutes the Medical Technologists (Dentistry) personnel are positioned at three levels:

- a. Lecturers
- b. Instructors
- c. Technologists

a. *Lecturers:*

- They shall perform small group teaching in tutorial, demonstration, and practical classes.
- Facilitate practical demonstration and work of the students in the dental practical room as a 'facilitator' of practical 'teaching group'.
- Senior lecturers can perform large group teaching as well.

b. *Instructors:*

- They will perform tutorial and demonstration classes relevant to practical items.
- Ensure and guide the students to prepare practical note books.
- Demonstrate elaborately procedures and methods of the practical works in the dental laboratory and follow students' performance in the practical classes.
- Supervise practical classes as a 'Team leader'.

c. *Technologists:*

- They shall perform practical in all practical classes.
- Run practical demonstration and works for the students.
- Perform small group demonstration relevant to practical.
- Responsible for dental practical room set up and organization including maintenance of registers, records and stock ledger under guidance of the supervisors.
- Responsible for the security and safety of the dental practical room especially in respect to maintenance, infection, fire, electric hazards and disposal of wastes.

Bibliography:

- Diploma Curriculum for IHT 2001 by SMFB
- Diploma Curriculum for IHT 2004 (Draft) by SMFB
- Certificate Course in Paramedical Subjects by Para Medical Education Board Bangalore, India.
- Senior Registered Nursing Curriculum by BNC
- Everest Institute - Dearborn, All Allied Health School, U.S.A. (2002 - 2008).