

# **Curriculum for Diploma in Medical Technology of Intensive Care Assistant (ICA)**

**State Medical Faculty of Bangladesh**

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**Curriculum for Diploma in Medical Technology of Intensive Care Assistant (ICA)**

*Compiled by & edited by-*

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Mohakhali, Dhaka

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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  
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## **Foreword**

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

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

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

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

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

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

**Professor Dr Syeda Shahina Subhan**  
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## **Acknowledgement**

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

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

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

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## List of Content

Course Overview		7
<b>1st Year</b>		
I	English	15
II	Basic Anatomy	19
III	Basic Physiology	21
IV	Basic Community Medicine & Behavioural Science	23
V	Basic computer science	27
<b>2nd Year</b>		
I	Physics	32
II	Chemistry	35
III	Basic Microbiology & Parasitology	37
IV	General Paediatric and Geriatric Nursing	40
V	Core subjects	43
<b>3rd Year</b>		
I	Critical & Emergency Care	45
II	Preoperative and Oncology Nursing	48
III	Clinical procedures	51
<b>4<sup>th</sup> Year</b>		
I	ICU Management	54
II	Critical patients care	57
	<i>Special Lab Attachment</i>	
<b>5th Year</b>		
Outline of Institutional Academic Laboratory		59
Outline of Special Laboratory Attachment		60
Job description		62

## Course Overview

### Course Aims.

To prepare intensive care technologists with knowledge, skill and attitude to bring about behavioral changes for enabling them to perform assigned responsibilities in their individual working stations.

### Course objectives:

After successful completion of the 4 years Diploma course in intensive care technology the students will be able to:

- Demonstrate a sound knowledge base in intensive care Technology discipline.
- Provide intensive care services in different ICUs: public & private health sectors.
- Participate in organization and maintenance of ICU.
- Use, operate and maintain equipment, apparatuses and drugs of Intensive care unit
- Examine specimens, prepare reports with sign, maintain records & submit periodical reports of an Intensive care unit.
- Maintain ICU safety, sterility and undertake measures for prevention of cross infection.
- Manage any emergency medical situations – Myocardial infarction, Bronchial asthma, pneumonia, ARDS, Stroke, and Near Drowning.
- Manage any emergency medical/ surgical situations – Polytrauma, Head Injuries and other Neurosurgical emergencies, Road Traffic Accidents (RTA), Multiple Fractures and Burn.
- Manage any emergency Gynecology and Obstetrics emergencies – Toxemia of pregnancy, APH, PPH and HELLP Syndrome.
- Carry out the role and responsibility of an intensive care technologist in different types of ICUs – Pediatric ICU (PICU), Neonatal ICU (NICU), Cardiac and Neurosurgical ICU and High Dependency Unit (HDU).
- Deal with common health problems and health care delivery services in Bangladesh.
- Demonstrate values and attitude consistent with ethical and professional conduct.
- Contribute to the future development of intensive care technologist.

### List of Competencies :

Ability to-

- Provide intensive care services in different ICUs: public & private health sectors.
- Participate in organization and maintenance of ICU.
- Use, operate and maintain equipment, apparatuses and drugs of Intensive care unit
- Examine specimens, prepare reports with sign, maintain records & submit periodical reports of an Intensive care unit.
- Maintain ICU safety, sterility and undertake measures for prevention of cross infection.
- Manage any emergency medical situations – Myocardial infarction, Bronchial asthma, pneumonia, ARDS, Stroke, and Near Drowning.
- Manage any emergency medical/ surgical situations – Polytrauma, Head Injuries and other Neurosurgical emergencies, Road Traffic Accidents (RTA), Multiple Fractures and Burn.
- Manage any emergency Gynecology and Obstetrics emergencies – Toxemia of pregnancy, APH, PPH and HELLP Syndrome.
- Carry out the role and responsibility of an intensive care technologist in different types of ICUs – Pediatric ICU (PICU), Neonatal ICU (NICU), Cardiac and Neurosurgical ICU and High Dependency Unit (HDU).
- Deal with common health problems and health care delivery services in Bangladesh.
- Demonstrate values and attitude consistent with ethical and professional conduct.
- Contribute to the future development of intensive care technologist.

## Course Details

### A. Course Title: Diploma in Medical Technology of Intensive Care Assistant (ICA)

### B. Course Philosophy and rationale

The course of Intensive Care Assistant (ICA) will help to develop skilled manpower in the Intensive Care Unit. ICA will play a vital role in ICU services available in the hospital

### 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 3<sup>rd</sup> Year is illegible 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.

### 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-1<sup>st</sup> year, 2<sup>nd</sup> year, 3<sup>rd</sup> year and 4<sup>th</sup> 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 <sup>st</sup> Year	12 months
2 <sup>nd</sup> Year	12 months
3 <sup>rd</sup> Year	12 months
4 <sup>th</sup> 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 1<sup>st</sup> year

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

**1<sup>st</sup> year**

Exams	Papers	Subjects	Lecture (in hours)	Tutorial (in hours)	Institutional Academic Lab based Practical Training/ Demonstration (in hours)	Formative Exam		Summative exam		Total Hours
						Preparatory leave	Exam time	Preparatory leave	Exam time	
Teaching-learning both formative & summative assessment	I	English	75	25	-	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
		<b>Total</b>	<b>395</b>	<b>195</b>	<b>210</b>	<b>17 days</b>	<b>25 days</b>	<b>800</b>		
		<b>Grand total</b>	<b>800 hours</b>			<b>42 days</b>			<b>800 hours</b>	

**2nd year**

Exams	Papers	Subjects	Lecture (in hours)	Institutional Academic Lab based Practical Training/ Demonstration (in hours)	Formative Exam		Summative exam		Total Hours
					Preparatory leave	Exam time	Preparatory leave	Exam time	
Teaching-learning both formative & summative assessment	I	Physics	40	30	7 days	10days	10 days	15days	70
	II	Chemistry	50	50					100
	III	Basic Microbiology & Parasitology	80	20					100
	IV	General Paediatric and Geriatric Nursing	100	150					250
	V	Core subjects	100	200					300
		<b>Total</b>	<b>370</b>	<b>450</b>	<b>17 days</b>	<b>25 days</b>	<b>820</b>		
		<b>Grand total</b>	<b>820 hours</b>			<b>42 days</b>			<b>820 hours</b>

### 3rd year

Exams	Papers	Subjects	Lecture (in hours)	Institutional Academic Lab based Practical Training/ Demonstration (in hours)	Formative Exam		Summative exam		Total Hours
					Preparatory leave	Exam time	Preparatory leave	Exam time	
Teaching-learning both formative & summative assessment	I	Critical & Emergency Care	100	150	7 days	10 days	10 days	15 days	250
	II	Preoperative and Oncology Nursing	100	150					250
	III	Clinical procedures	100	150					250
		<b>Total</b>	<b>300</b>	<b>450</b>	17 days		25 days		750
		<b>Grand total</b>	<b>750 hours</b>		<b>42 days</b>				<b>750 hours</b>

### 4<sup>th</sup> Year

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	
Teaching-learning both formative & summative	I	ICU Management	100	150	150	7 days	10 days	10 days	15 days	400
	II	Critical patients care	100	150	150					400
		<b>Total</b>	<b>200</b>	<b>300</b>	<b>300</b>	17 days		25 days		<b>800</b>
		<b>Grand total</b>	<b>800 hours</b>			<b>42 days</b>				<b>800 hours</b>

## **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 illegible to perform lecture/theoretical class.
  - Subject oriented instructors will be illegible to perform practical/demonstration class.

## **G. Assessment**

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

### **Assessment Methods:**

- There will be in-course/formative (card/ item) and end-course/summative (terminal) assessment for the students in each part (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> & 4<sup>th</sup> 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 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year Final examinations respectively.

### **Carry on**

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

<b>Numerical percentage of Marks</b>	<b>GPA letter Grade</b>	<b>GPA Numerical Grade (Grade points)</b>
85% and above	A <sup>+</sup>	4
81% to less than 85%	A	3.75
76% to less than 80%	A <sup>-</sup>	3.5
71% to less than 75%	B <sup>+</sup>	3.25
66% to less than 70%	B	3.00
61% to less than 65%	B <sup>-</sup>	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
<b>Total</b>		<b>425</b>	<b>135</b>	<b>120</b>	<b>80</b>	<b>800</b>

### 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	General Paediatric and Geriatric Nursing	100	40	40	20	200
V	Core subjects	100	40	40	20	200
<b>Total</b>		<b>450</b>	<b>140</b>	<b>150</b>	<b>60</b>	<b>800</b>

### 3rd Year Examination

Paper	Subjects	Written Exam	Oral Exam	Practical Exam	Formative exam	Total Marks
I	Critical & Emergency Care	100	40	40	20	200
II	Preoperative and Oncology Nursing	100	40	40	20	200
III	Clinical procedures	100	40	40	20	200
<b>Total</b>		<b>300</b>	<b>120</b>	<b>120</b>	<b>60</b>	<b>600</b>

### 4<sup>th</sup> Year Examination

Paper	Subjects	Written Exam	Oral Exam	Practical Exam	Formative exam	Total Marks
II	ICU Management	100	40	40	20	200
II	Critical patients care	100	40	40	20	200
	<i>Special Lab Attachment</i>					
<b>Total</b>		<b>200</b>	<b>80</b>	<b>80</b>	<b>40</b>	<b>400</b>

**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 orie nted 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

# 1<sup>st</sup> 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><b>Text book: English for Today-Published by N.C.T.B. (Intermediate)</b></p> <p><b>Unit- Three: Learning English.</b></p> <ol style="list-style-type: none"> <li>1. Learning a language</li> <li>2. Why to learn English</li> <li>3. How to learn English</li> <li>4. Different learners, different ways</li> <li>5. Dealing with grammar</li> <li>6. Integrated skills development</li> <li>7. How to use dictionary</li> </ol> <p><b>Unit-Six: Our Environment.</b></p> <ol style="list-style-type: none"> <li>1. The environment and the ecosystem</li> <li>2. How the environment is polluted.</li> <li>3. The world is getting warmer.</li> <li>4. Let's not be cruel to them.</li> <li>5. Beware of pollution.</li> <li>6. Forests should stay.</li> <li>7. How to manage waste.</li> </ol> <p><b>Unit-Twenty-four: People, People Everywhere</b></p> <ol style="list-style-type: none"> <li>1. What's the problem?</li> <li>2. Kalim Majhee's boat.</li> <li>3. The rootless.</li> <li>4. Why is there discrimination?</li> <li>5-7. The Revenge.</li> </ol>	16	

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

*Course Contents of English (Part -II)*

*Marks = 25+25*

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Tutorial
	<b>Communicative English :</b> <ul style="list-style-type: none"><li>▪ Reading skill</li><li>▪ Writing skill</li><li>▪ Listening skill</li><li>▪ Conversations skill</li></ul>	4 4 4 4	8 8 8 10
	<b>Total</b>	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.	<b>Introductory Anatomy :</b> <b>a) Anatomical Terminologies :</b> i) Definition of Anatomy ii) Anterior, Posterior, superior, inferior, medial, lateral & median plane. <b>b) i) Systems of Human body</b> ii) Human cell: structure and classification. iii) Cell division: types. Phases of mitosis iv) Tissue: Types of tissues.	10	05	10
2.	<b>Musculoskeletal system:</b> ▪ component ▪ Types of bones & joints ▪ short description of important bones	10	10	05
3.	<b>Cardio-vascular system.</b> ▪ Location & Basic structure of cardiovascular system ▪ Short description of heart, major arteries, capillaries/veins	10	05	10
4.	<b>Respiratory system</b> ▪ 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.	<b>Gastro-intestinal and Hepatobiliary system:</b> <ul style="list-style-type: none"> <li>▪ Short description of the different parts of alimentary system: mouth, tongue, esophagus, stomach, small and large intestine, rectum &amp; anal canal</li> <li>▪ Anatomy of salivary glands, pancreas, liver, gall bladder</li> </ul>	10	10	10
6.	<b>Genito –urinary system:</b> <ul style="list-style-type: none"> <li>▪ Anatomy of urinary system</li> <li>▪ Male genital system:</li> <li>▪ Female genital system</li> </ul>	10	10	10
7.	<b>Nervous system and Endocrine system.</b> <ul style="list-style-type: none"> <li>▪ Basic structure of nervous system</li> <li>▪ Parts of nervous system and short description of brain, spinal cord, cranial nerves, peripheral nerves</li> <li>▪ Autonomy of nervous system and short description of sense organs-eye, ear, nose, throat, tongue and skin</li> <li>▪ Important endocrine glands</li> </ul>	12	12	10
8.	<b>Lymphatic System :</b> <ul style="list-style-type: none"> <li>▪ Anatomy of lymph nodes and vessels</li> </ul>	02	02	05
	<b>Total</b>	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.	<b>Introductory Physiology:</b> <ul style="list-style-type: none"> <li>▪ Physiological terminologies</li> <li>▪ Basic structure and organizations of human body</li> <li>▪ Cell physiology and metabolism/multiplication of living cells</li> <li>▪ General functions of different systems of the body: Musculoskeletal/Respiratory/ Circulatory/Digestive/Urinary/Nervous/ Endocrine/Immune/ Reproductive</li> </ul>	10	04	10
2.	<b>Musculoskeletal system :</b> <ul style="list-style-type: none"> <li>▪ Physiological components of musculoskeletal system</li> <li>▪ Functions of important muscles, bones &amp; joints of human body</li> <li>▪ Movements of joints</li> </ul>	10	10	05
3.	<b>Cardiovascular System:</b> <ul style="list-style-type: none"> <li>▪ Functions of circulatory system</li> <li>▪ Composition of Blood and their Functions</li> <li>▪ Conductive system of heart &amp; Cardiac cycle</li> <li>▪ Physiology of Blood Pressure</li> </ul>	10	05	10

Sl. No	Topics/Lessons	Teaching/learning Hours		
		Lecture	Tutorial	Practical/ Demonstration
4	<b>Respiratory system :</b> <ul style="list-style-type: none"> <li>▪ Functions of respiratory system</li> <li>▪ Mechanism of breathing</li> </ul>	05	05	10
5	<b>Digestive and hepatobiliary system:</b> <ul style="list-style-type: none"> <li>▪ Definition of digestion, absorption, metabolism</li> <li>▪ Digestion, absorption &amp; metabolism of carbohydrate, fat &amp; protein</li> <li>▪ Nutritional deficiency disorders : anemia, iodine deficiency, vitamin deficiencies</li> <li>▪ Functions of liver, pancreas and gall bladder</li> <li>▪ Composition &amp; functions of different digestive juices &amp; bile</li> </ul>	10	10	10
6	<b>Genitourinary system:</b> <ul style="list-style-type: none"> <li>▪ Functions of Kidney</li> <li>▪ Formation, appearance and composition of urine</li> <li>▪ Functions of reproductive organs of both sexes: uterus/ovary/fallopian tube/vagina/penis/testes/scrotum/vas deferens/prostate</li> </ul>	10	10	10
7	<b>Nervous system, organs of special sense:</b> <ul style="list-style-type: none"> <li>▪ Functions of motor, sympathetic &amp; parasympathetic nervous system</li> <li>▪ Functions of cranial nerves</li> <li>▪ Cerebrospinal fluid formation, composition &amp; function</li> <li>▪ Functions of special sense organs-eye, ear, nose, tongue and skin</li> <li>▪ Functions of the endocrine glands &amp; hormones secreted by them: Pituitary / thyroid / parathyroid / adrenal /gonads/pancreas/placenta</li> </ul>	12	10	10
8	<b>Immune System :</b> <ul style="list-style-type: none"> <li>▪ Definition/classification and components of immune system</li> <li>▪ Cells and tissues of immune system &amp; their functions</li> </ul>	05	05	
9	<b>Lymphatic System :</b> <ul style="list-style-type: none"> <li>▪ Structure &amp; functions of lymph nodes and vessels</li> </ul>	03 05	01	
	<b>Total</b>	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.	<b>Introductory community medicine:</b> <ul style="list-style-type: none"> <li>▪ Definition of Community Medicine</li> <li>▪ Concept of health : Definition / Dimensions / Spectrum / Determinants / Indicators</li> <li>▪ Concept of general principles for prevention and control of communicable and Non-communicable diseases</li> <li>▪ Concept of health promotion: Definition / Interventions</li> </ul>	16	10
2.	<b>Primary health care:</b> <ul style="list-style-type: none"> <li>▪ Definition/Elements/ Principles/Scope</li> </ul>	05	02
3.	<b>Health care services and organization:</b> <ul style="list-style-type: none"> <li>▪ Primary/Secondary/Tertiary Health Care services</li> <li>▪ WHO/UNDP/UNICEF/CARE/ International Red Crescent / BIRDEM / ICDDR,B</li> </ul>	06	02
4.	<b>Basic Epidemiology:</b> <ul style="list-style-type: none"> <li>▪ Definition /Aims/Methods/Scope</li> <li>▪ Definition of epidemiological terms eg. Epidemic/Endemic/Pandemic/Sporadic/ Zoonotic disease/ Incubation period/ period of communicability/ Epidemiological Triad/ Infection/ Contamination/ Infestation etc.</li> <li>▪ Major health programs in Bangladesh</li> <li>▪ Medical Information system (MIS)</li> </ul>	12	06
5.	<b>Basic Bio-statistics :</b> <ul style="list-style-type: none"> <li>▪ Definition /Scope/Functions/Importance and uses of Biostatistics, Medical statistics, Health statistics, Vital statistics</li> <li>▪ Definition of vital events</li> <li>▪ Definition/types/characteristics/functions/importance/sources/collection and presentation of data</li> <li>▪ Morbidity/Mortality/Fertility statistics</li> </ul>	17	04

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

Sl. No	Topics/Lessons	Teaching/learning Hours	
		Lecture	Practical/ Demonstration
11.	<b>Environment and sanitation:</b> <ul style="list-style-type: none"> <li>▪ Definition of environment, pollution, sanitation and environmental sanitation</li> <li>▪ Water: Safe wholesome water/Source of water/water pollution/Hazards of water pollution /water borne diseases/Hardness of water/Purification of water</li> <li>▪ Air : Definition/Composition</li> <li>▪ Air pollution : Sources, pollutants, indicators, health &amp; other effects, prevention &amp; control</li> <li>▪ Ventilation: Definition/Standards/ Types/ Criteria of good ventilation / effects of good ventilation</li> <li>▪ Solid waste: Definition/Types/Sources/Health hazards</li> <li>▪ Disposal of solid waste: Dumping/Controlled tipping or sanitary land fill/ incineration/ composting/Manure pits/Burial</li> <li>▪ Excreta or night soil: Public health importance/Health hazards/how disease occurs from it/Sanitation Barrier/ Methods of excreta disposal (Unsewered area/Sewered area)</li> </ul>	25	04
12.	<b>First Aid :</b> <ul style="list-style-type: none"> <li>▪ Definition / Principles of First Aid</li> <li>▪ First Aid Box-List of contents and their uses</li> <li>▪ First Aid of : Cuts, bleeding, burn, shock, dog bite, snake bite</li> </ul>	12	06
	<b>Total</b>	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><b>Detailed Contents :</b></p> <p><b>Relevant Instruction for Practical :</b></p> <ul style="list-style-type: none"> <li>▪ Information Technology -its concept and scope</li> <li>▪ Computers for information storage, information seeking, information processing and information transmission</li> <li>▪ Elements of computer system - computer hardware and software: data -numeric data, numeric data; contents of program, processing</li> <li>▪ Computer organization, block diagram of a computer, CPU, memory</li> <li>▪ Input devices; keyboard, mouse etc; output devices; VDU and Printer, scanner, Plotter</li> <li>▪ Electrical requirements, inter-connections between units, connectors and cables</li> <li>▪ Secondary storage; magnetic disks-tracks and sectors, optical disk (CD and DVD Memory), primary and secondary memory: RAM, ROM, PROM etc.</li> <li>▪ Capacity; device controllers, serial port, parallel port system bus 47</li> <li>▪ Exercises on file opening and closing; memory management; device management; device management and input-output (I/O) management with respect of windows</li> <li>▪ Installation concept and precautions to be observed while installing the system and software</li> <li>▪ Introduction about Operating systems such as and Windows</li> <li>▪ Special features, various commands of MS word and MS- Excel, Power -point</li> <li>▪ About the internet-server types, connectivity (TCOP/IP, shell); applications of internet like: e-mail and browsing</li> <li>▪ Various Browsers like WWW (World wide web); hyperlinks; HTTP (Hyper Text Transfer Protocol); FTP (File Transfer Protocol)</li> <li>▪ Basic of Networking -LAN, WAN, Topologies</li> </ul>	25	
	<ul style="list-style-type: none"> <li>▪ Give a PC, name its various components and list their functions</li> <li>▪ Identification of various parts of a computer and peripherals</li> <li>▪ Practice in installing a computer system by giving connection and loading the system software and application software</li> <li>▪ Installation of DOS and simple exercises on TYPE, REN, DEL, CD, MD, COPY, TREE, BACKUP commands</li> <li>▪ Exercises on entering text and data (Typing Practice)</li> <li>▪ Installation of Windows 98 or 2000 etc.</li> <li>▪ Features of windows as an operating system</li> <li>▪ Start</li> <li>▪ Shutdown and restore</li> <li>▪ Creating and operating on the icons</li> <li>▪ Opening, closing and sizing the windows</li> <li>▪ Using elementary job commands like-creating, saving, modifying, finding and deleting a file</li> <li>▪ Creating and operating on a folder</li> <li>▪ Changing setting like, date, time color (back ground and fore ground)</li> <li>▪ Using short cuts</li> <li>▪ Using on line help</li> </ul>		

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

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

**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

## 2<sup>nd</sup> Year

### Paper I : Subject - Physics

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

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

#### Objectives:

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

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

#### List of Competencies:

Ability to

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

#### Course Contents of Physics

Sl.No	Topic/Lessons তত্ত্বীয়	Teaching/Learning Hours	
		Lecture	Practical
১।	<b>বলবিদ্যা ও পদার্থের ধর্ম :</b> ➤ সরল রেখার গতি, গতির সমীকরণ, নিউটনের গতির সূত্র ভ্রুণ ও বল, খাত বল, ভেকটর ও সেলের রাশি। ➤ কৌণিক গতি, কৌণিক বেগ ও ভ্রুণ বৃত্তাকার পথে গতি, কেন্দ্রভিগ বল। ➤ কাজ, ক্ষমতা ও শক্তি, শক্তির সংরক্ষণ নীতি। ➤ সরল দোল গতি, সরল দোলক ➤ আর্কিমিডিসের সূত্র ও তার প্রয়োগ আপেক্ষিক গুরুত্ব নির্ণয়।	০৮ ঘন্টা	
২।	<b>তাপ :</b> তাপমিতি, তাপের একক, আপেক্ষিক তাপ, তাপীয় ক্ষমতা পানিসম ও সুপ্ততাপ এবং হাঁহাদের নির্ণয় পদ্ধতিঃ সরলীয় পদ্ধতিতে তাপের পরিবাহিতা নির্ণয়।	৫ ঘন্টা	
৩।	<b>শব্দ :</b> ➤ 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, সূত্রের প্রমাণ।	৫ ঘন্টা	

৪।	<b>আলোক :</b> <ul style="list-style-type: none"> <li>➤ গোলীয় পৃষ্ঠে প্রতিফলন।</li> <li>➤ সমতল ও গোলীয় পৃষ্ঠে প্রতিফলন। সম্পূর্ণ প্রতিফলন, প্রতিসরাংক, প্রিজম প্রতিসারণ।</li> <li>➤ লেন্সঃ উত্তল ও অবতল লেন্স। লেন্সের শক্তি ও বিবর্ধন লেন্স সংযোজন। চোখের ত্রুটি সমূহ ও প্রতিকার।</li> <li>➤ আলোক যন্ত্র-মাইক্রোস্কোপ।</li> </ul>	৫ ঘন্টা	
৫।	<b>চুম্বক :</b> <ul style="list-style-type: none"> <li>➤ চুম্বকনের বিভিন্ন পদ্ধতিঃ চুম্বকের মতবাদ, চুম্বকের ক্ষেত্র ও প্রবাল্য। বিপরীত বর্ণীয় সূত্র প্রান্তমুখী ও প্রস্থমুখী অবস্থানে চুম্বকের প্রাবল্য। বিক্ষেপী চুম্বকমান যন্ত্র ও ইহার ব্যবহার।</li> <li>➤ ভূচুম্বকত্ব।</li> </ul>	৪ ঘন্টা	
৬।	<b>তড়িৎ :</b> <ul style="list-style-type: none"> <li>➤ স্থির তরিৎ, চার্জের অস্তিত্ব ও প্রকৃতি নির্ণয়। বৈদ্যুতিক আবেশ, কুলম্বের সূত্র, ধারকত্ব, তড়িৎ বিভব। সমান্তরাল পাত ধারক।</li> <li>➤ বিদ্যুৎ কোষ, তাদের কেন্দ্রে উৎপন্ন চুম্বকক্ষেত্র। বিদ্যুৎ প্রবাহ ও চার্জের একক।</li> <li>➤ ওহমের সূত্র, বিভব বৈষম্যের একক। রোধ ও আপেক্ষিক রোধ, রোধের একক, রোধ সংযোজন, এমিটার, ভোল্ট মিটার।</li> <li>➤ বৈদ্যুতিক পরিমাপ, হুইট স্টেম ব্রিজ, মিটার ব্রিজ, পোস্ট অফিস বক্স ও পাটেন শিও মিটার।</li> <li>➤ তড়িৎ প্রবাহ ও উত্তাপ, জুলের সূত্র, বৈদ্যুতিক পদ্ধতিতে নির্ণয়।</li> <li>➤ তড়িৎ প্রবাহে রাসায়নিক ক্রিয়া, তড়িৎ বিশেষণ, সূত্র ও ইহাদের প্রমাণ।</li> <li>➤ তড়িৎ চুম্বকীয় আবেশ।</li> </ul>	১৩ ঘন্টা	
	ব্যবহারিক	৪০	

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

মান বন্টন :      তত্ত্বীয় = ৬০

- ১। পদার্থের সাধারণ ধর্ম, আলোক ও তড়িৎ প্রতিটি শাখা থেকে ৮ নম্বরের দুটি ও ৪ নম্বরের ২টি করে মোট (৬টি + ৬টি)= ১২টি প্রশ্ন আকারে। তন্মধ্যে ৮ নম্বরের ১টি করে ৩ শাখায় ৩টি ও ৪ নম্বরের ১টি করে ৩ শাখায় 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 : তত্ত্বীয়+ব্যবহারিক+মৌখিক = ১০০ মার্কস

## Paper II: Subject - Chemistry

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

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

### Objectives:

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

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

### List of Competencies:

Ability to--

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

### Course contents of Chemistry

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

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

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

গ্রুপ - ক- ২০ নম্বর

গ্রুপ - খ - ২০ নম্বর

গ্রুপ - গ - ২০ নম্বর

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

## **Paper III: Subject - Basic Microbiology & Parasitology**

**Total hours: 100-hour**

**Lecture: 80 hour**

**Practical: 20 hours**

**Total marks-200**

**Written-100**

**Oral-40**

**Practical- 40**

**Formative- 20**

### **Learning objectives:**

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

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

### **List of Competencies:**

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

**Course Contents of Basic Microbiology & Parasitology**

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

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

#### 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 IV: General, Pediatric and Geriatric Nursing

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

**Total Marks – 200**  
**Written – 100**  
**Practical – 40**  
**Oral -40**  
**Formative – 20**

## **Objective A**

At the end of the course of General Nursing, the students should be able to

- Distinguish culturally sensitive effective communication strategies when interacting with patient of various ages, their families, and members of the health care team.
- Integrate basic principles of general nursing, concepts of nursing care, ethical and legal aspects of general nursing care.
- Discuss /describe the roles and functions of general nursing.

## **List of Competencies:**

### **At the end of general nursing**

#### **Ability to**

- Communicate with the patient, their families and members of the health care team. ++
- Integrate basic principles of general nursing, concepts of nursing care, ethical and legal aspects of general nursing care.
- Discharge the roles and functions of general nursing.

## **Objective B**

At the end of the course of Pediatric Nursing, the students should be able to

- distinguish culturally sensitive effective communication strategies when interacting with pediatric patient of various ages, their families, and members of the health care team.
- modify the nursing process as a systematic critical thinking method to provide safe and effective care to pediatric patients and their families in a variety of settings.
- determine the theoretical contributions made by development theories as they apply to growth and development from birth through adolescence utilizing a holistic approach.
- distinguish appropriate assessment data needed to provide caring interventions that promote teaching and learning to assist patients in meeting their needs at each stage of childhood, across the wellness-illness continuum.
- determine the availability of existing programs needed to manage the care of the pediatric patient in collaboration with other health team members.
- provide nursing care to child cancer patients
- provide nursing care to pediatric patients suffering from congenital diseases
- provide nursing care and 1<sup>st</sup> line management of neonatal emergencies

## **List of Competencies:**

### **At the end of pediatric nursing**

#### **Ability to--**

- Distinguish culturally sensitive effective communication strategies when interacting with pediatric patient of various ages, their families, and members of the health care team.
- Modify the nursing process as a systematic critical thinking method to provide safe and effective care to pediatric patients and their families in a variety of settings.
- Determine the availability of existing programs needed to manage the care of the paediatric patient in collaboration with other health team members.

- Distinguish appropriate assessment data needed to provide caring interventions that promote teaching and learning to assist patients in meeting their needs at each stage of childhood, across the wellness-illness continuum.
- Determine the availability of existing programs needed to manage the care of the pediatric patient in collaboration with other health team members.

### Objective C

At the end of the course of Geriatric Nursing, the students should be able to

- Integrate basic principles related to characteristics of the aging population, concepts of geriatric nursing care, theories of aging, ethical and legal aspects of geriatric nursing care into the care of the aging adult.
- Incorporate the nursing process in the care of the geriatric patient.
- provide nursing care to patients of organ failure
- provide palliative & nursing care to patients of bedsore, unconscious & CVD patients
- provide palliative & nursing care to patients on ventilatory care, tracheostomy etc.
- Incorporate physiologic and psychosocial health in the care of older adults.
- Identify the principles of medication administration that are important to the elderly and the effects of medications in the elderly.

### List of Competencies

#### At the end of geriatric nursing

Ability to--

- Integrate basic principles related to characteristics of the aging population, concepts of geriatric nursing care, theories of aging, ethical and legal aspects of geriatric nursing care into the care of the aging adult.
- Incorporate the nursing process in the care of the geriatric patient.
- Incorporate physiologic and psychosocial health in the care of older adults.
- Identify the principles of medication administration that are important to the elderly and the effects of medications in the elderly.

### Course content

S/No	Topics/Lessons	Teaching /Learning hours	
		Lecture	Practical Demo
1.	Basic principles of general nursing in ICU	04	05
2.	Maintenance of general hygiene and sanitation of ICU patients	04	05
3.	General care of patient, foot care	03	05
4.	General nursing care of a patient on ventilator	03	05
5.	Nursing of burn patient	04	05
6.	Management of bed sore	02	05
7.	Management of CVD patient	03	05
8.	Management of chronic liver disease	04	05
9.	Renal failure patient management	04	05
10.	Tracheostomy patient management	04	05
11.	Management of long term patient management in ICU	05	10
12.	Principles and management of congenital disease	05	10
13.	Principles of neonatal nursing, neonatal emergencies and management of neonatal emergencies	05	10
14.	Principles of pediatric critical care	05	10
15.	Principles of pediatric oncology	05	10
16.	Principles and management of geriatric patients	05	10

17.	Palliative care to geriatric patient	04	05
18.	Immunization and management of communicable disease	04	05
19.	Principles and management of COPD patient	04	05
20.	Management of hypertensive patient	04	05
21.	Management of patient with acute retention of urine	05	05
22.	Principles and management of patient with diabetic ketoacidosis	05	05
23.	Management of electrolyte imbalance	04	05
24.	Principles and management of Multi Organ dysfunction	05	05
	TOTAL	100	150

**CLASS PERFORMANCE RECORDS**  
**GENERAL NURSING, PAEDIATRIC AND GERIATRIC NURSING**  
**(INTENSIVE CARE TECHNOLOGY COURSE)**  
**2<sup>nd</sup> YEAR**

S/No	Topics/Lessons	Date	Marks obtained	Signature of the Teacher
1.	Basic principles of general nursing in ICU			
2.	Maintenance of general hygiene and sanitation of ICU patients			
3.	Nursing of burn patient			
4.	Bed sore			
5.	CVD patient			
6.	COPD			
7.	Ventilator & other monitors			
8.	Principles and management of geriatric patients			
9.	Palliative care to geriatric patient			
10.	Diabetic coma			
11.	Long term patient in ventilator			
12.	Hypertensive crisis			
13.	Multi organ dysfunction syndrome			
14.	Acute retention of urine			
15.	Principles of pediatric critical care			
16.	Principles of neonatal nursing			
17.	Common congenital diseases			
18.	Breathing problems of pediatric patient			
	Average marks secured 20%=			

**Assessment:**

Written – SAQ= 80 marks, MCQ=20 marks

Practical or OSPE 40 marks, Oral/SOE-40 marks, Formative-20 marks

## Paper-V: Core Subjects

**Total 300 hours**  
**Lecture: 100 hours**  
**Practical: 200 hours**

**Total Marks – 200**  
**Written – 100**  
**Practical – 80**  
**Formative – 20**

### Objectives

At the end of the course on Core subject, students should be able to

- Promote professional attitude to ethical and legal consideration of ICU
- Make themselves aware regarding pharmacotherapy, intensive care anesthesia, analgesia & transportation of patient
- Counsel the patient and as well as attendant
- Display good personal hygiene and neat and professional appearance.
- Demonstrate respect for oneself and others; patients, colleagues and peers.
- Seek advice and assistance when unsure or situation demands.
- Exhibit initiative, motivation, and interest related to critical care experiences and care assignments.
- Demonstrate honesty and integrity in all activities.
- Maintain patient confidentiality at all times.
- Collaborate appropriately with members of the inter-professional team.
- Do Counseling of the patient & breaking bad news
- Orient themselves about transportation of the patient
- Orient themselves about declaration of brain death
- Orient themselves about the procedure & legal aspects of euthanasia
- Maintain medical records in ICU

### List of Competencies:

#### At the end of core subject

Ability to--

- Practice good personal hygiene and neat and professional appearance.
- Demonstrate respect for oneself and others; patients, colleagues and peers.
- Behave (Seeking advice and assistance) as per the situation demands.
- Play role in critical care services (Exhibits initiative, motivation, and interest related to critical care experiences and care assignments.)
- Demonstrate honesty and integrity in all activities.
- Maintain patient confidentiality at all times.
- Collaborate appropriately with members of the inter-professional team.
- Counsel the patient and as well as attendant.
- Practice the ethical and legal issues when caring for critically ill patients.

### Course Content

S/No	Topics/Lessons	Teaching /Learning hours	
		Theory	Practical Demonstration
1.	Ethical & Legal consideration in ICU	10	15
2.	Orientation of medical records in ICU	10	20
3.	Breaking of bad news, dealing with patient and next of kin (NOK)	10	20
4.	Counseling of the patient & attendant in ICU	10	15

5.	Medicolegal aspect of poisoning, suicide and homicide	10	25
6.	Transportation of patient	10	20
7.	Brain death	05	15
8.	Psychiatric problem in ICU	05	15
9.	Euthanasia	05	10
10.	Do not Resuscitate (DNR) policy	10	20
11	ICU syndrome	05	10
12	Moral values of ICU service	10	15
	TOTAL=300 Hours	100	200

**CLASS PERFORMANCE RECORDS**  
**CORE SUBJECT**  
**(INTENSIVE CARE TECHNOLOGY COURSE)**  
**2<sup>nd</sup> YEAR**

S/No	Topics/Lessons	Date	Marks obtained	Signature of the Teacher
1	Ethical & Legal consideration in ICU			
2	Breaking of bad news, dealing with patient and next of kin (NOK)			
3	Counseling of the patient & attendant in ICU			
4	ICU syndrome			
5	Poisoning, suicide and homicide			
6	Brain death			
7	Do not Resuscitate (DNR) policy			
8	Euthanasia			
9	Moral values of ICU service			
	Average marks secured 20%=			

**Assessment:**

Written – SAQ= 80 marks, MCQ=20 marks

Practical or OSPE 40 marks, Oral/SOE-40 marks, Formative-20 marks

## 3<sup>rd</sup> Year

### Paper I: Critical & Emergency Care

**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 of critical and emergency care, the students should be able to

- describe/identify general principles related to patients requiring critical care and emergency nursing.
- perform nursing management of medical emergency
- perform Nursing management of surgical emergency
- perform Nursing management of spinal injury
- perform Nursing management of head injury
- perform Imaging procedure
- provide Pharmacotherapy
- assist in Intensive care anesthesia and analgesia
- perform Nursing management of organ failure
- provide nursing care Management of Unconscious patient
- provide nursing care to poisoning & shock patients
- differentiate among the independent, dependent, and interdependent interventions of critical care and emergency nursing.
- describe the concept of triage in emergency nursing.
- describe Discuss the roles and functions of critical care and emergency nursing.
- name/ Exercise legal and ethical issues that can affect critical care or emergency nursing

#### List of Competencies

##### At the end of the course

- Describe the general function and set up of each clinical setting.
- Explain the roles and responsibilities of working in each clinical setting; e.g., triage, dialysis etc.
- Discuss the assessment and treatment priorities in each clinical setting.
- Identify emergency equipment used in various situations.
- Demonstrate how to apply and properly use emergency equipment.
- Identify and monitor normal and abnormal diagnostic test results.
- Recognize signs and symptoms of emergencies, initiate interventions and seek assistance as needed.
- Name legal and ethical issues that can affect critical care or emergency nursing

#### List of Competencies:

Ability to

- describe general principles related to patients requiring critical care and emergency nursing.
- perform nursing management of medical emergency
- perform Nursing management of surgical emergency
- perform Nursing management of spinal injury
- perform Nursing management of head injury

- **assist/** perform Imaging procedure
- provide Pharmacotherapy
- assist in Intensive care anesthesia and analgesia
- perform Nursing management of organ failure
- provide nursing care Management of Unconscious patient
- differentiate among the independent, dependent, and interdependent interventions of critical care and emergency nursing.
- describe the concept of triage in emergency nursing.
- describe Discuss the roles and functions of critical care and emergency nursing.
- name/ Exercise legal and ethical issues that can affect critical care or emergency nursing

## Course Content

S/No	Topics/Lessons	Teaching Theory/Learning hours	
		Lecture	Practical Demo
1.	Management of severe Acute Bronchial Asthma Patient	05	10
2.	Management of ARDS Patient	05	10
3.	Management of Unconscious patient	05	10
4.	Management of Acute MI patient	05	10
5.	Management of Cardiac arrest patient	05	10
6.	Management of respiratory failure	05	10
7.	Critical care nursing Renal & Neurology system	05	10
8.	Critical care Nursing Trauma and Emergency	05	10
9.	Pediatric & Geriatric nursing	05	05
10	Imaging procedure	05	05
11.	Pharmacotherapy	04	05
12.	Intensive care anesthesia and analgesia	04	05
13	Noninvasive monitoring in ICU, principles of operations and maintenance of noninvasive monitors	05	05
14.	Intensive care unit type, setup, channel of command and maintenance	05	05
15.	Nursing management of medical emergency	04	05
16	Nursing management of surgical emergency	04	05
17.	Nursing management of shock	04	05
18.	Nursing management of poisoning patient	04	05
19.	Nursing management of IHD, hypertension, heart failure and myocardial infarction	04	05
20.	Nursing management of spinal injury	04	05
21	Nursing management of head injury	04	05
22.	Nursing management of hepatic failure	04	05
	Total:	100	150

Teaching Methods

1. Lecture  
Practical demonstration

Media:

- Multi media
- Laptop
- OHP
- White board/Marker
- Black/board
- Models/dummies
- Laboratory

**Assessment:**

Written – SAQ= 80 marks, MCQ=20 marks

Practical or OSPE 40 marks, Oral/SOE-40 marks, Formative-20 marks

**CLASS PERFORMANCE RECORDS**  
**CRITICAL CARE & EMERGENCY NURSING**  
**(DIPLOMA IN INTENSIVE CARE TECHNOLOGY COURSE)**  
**3<sup>rd</sup> YEAR**

S/No	Topics/Lesson	Date	Marks obtained	Signature of the Teacher
1	Unconscious patient			
2	Acute severe bronchial asthma			
3	ARDS			
4	Acute MI			
5	Cardiac Arrest			
6	Ethical and Legal consideration			
7	Medical and surgical emergencies			
8	Intensive care unit			
9	Intensive care anesthesia and analgesia			
10	Liver disease			
11	Respiratory failure			
12	Renal failure			

## Paper II: Preoperative & Oncology Nursing

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

**Total Marks – 200**  
**Written – 100**  
**Oral -40**  
**Practical – 40**  
**Formative – 20**

### Objective A.

At the end of the course of preoperative nursing the students should be able to-

- describe /identify the basic principles of surgical Aseptic Technique including the association of Operating Room Nurses Standards of Care and the methods of sterilization and disinfection.
- establish a client outcome and plan of care that focuses on prevention of problems.
- identify potential surgical hazards and safety measures to prevent injury including patient and occupation related hazards.
- describe the basic nursing functions related to intraoperative care including positioning and surgical skin preparation for the surgical patient.
- apply/ Identify the principles and standards related to the establishment and maintenance of the sterile field as a non-sterile member of the team.
- carry out Preoperative assessment
- assist to Provide Anesthesia & Preoperative nursing
- assist to Provide Post-operative emergency management
- assist to Provide Preoperative management of diabetic patient
- assist to Provide Preoperative care of unconscious patient
- assist to Provide Preoperative care of RTA patient
- assist in Management of preoperative, per-operative& postoperative shock, temperature and post anesthetic shivering

### List of Competencies:

#### At the end of preoperative nursing

- identify the basic principles of surgical Aseptic Technique including the association of Operating Room Nurses Standards of Care and the methods of sterilization and disinfection.
- identify the basic nursing functions related to intraoperative care including positioning and surgical skin preparation for the surgical patient.
- identify the principles and standards related to the establishment and maintenance of the sterile field as a non-sterile member of the team.

### List of Competencies:

Ability to--

1. describe the basic principles of surgical Aseptic Technique including the association of Operating Room Nurses Standards of Care and the methods of sterilization and disinfection.
2. establish a client outcome and plan of care that focuses on prevention of problems.
3. identify potential surgical hazards and safety measures to prevent injury including patient and occupation related hazards.
4. **provide** the basic nursing **care** functions related to intraoperative care including positioning and surgical skin preparation for the surgical patient.
5. **apply** the principles and standards related to the establishment and maintenance of the sterile field as a non-sterile member of the team.
6. carry out Preoperative assessment
7. provide Anesthesia & Preoperative nursing
8. provide Post-operative emergency management
9. provide Preoperative management of diabetic patient
10. provide Preoperative care of unconscious patient

- 11 provide Preoperative care of RTA patient
12. Management of preoperative, per-operative & postoperative shock, temperature and post anesthetic shivering

**Objective B.**

At the end of the course of Oncology Nursing the students should be able to-

1. Assist the patient and family to adapt to living with cancer.
2. Provide supportive care during implementation of the cancer treatment and concentrated cancer treatment programs.
3. Prevent and manage problems occurring due to the cancer or treatment.
4. Provide symptomatic management for individuals with relapsed or advanced stage cancers and providing physical, psychological and social support
5. Deliver care taking to ensure that the most appropriate cancer care services are provided.
6. Assess nursing practices in terms of cancer care and to conduct research.
7. Describe Principles and practices of oncology nursing
8. Provide Systemic therapy and nursing to oncology patients
9. Provide Radio therapy and nursing to oncology patients

**List of Competencies:**

**At the end of oncology nursing**

1. Assist the patient and family to adapt to living with cancer.
2. Provide supportive care during implementation of the cancer treatment and concentrated cancer treatment programs.
3. Prevent and manage problems occurring due to the cancer or treatment..
4. Symptom management for individuals with relapsed or advanced stage cancers and providing physical, psychological and social support.

**List of Competencies**

Ability to--

1. assist the patient and family to adapt to living with cancer.
2. provide supportive care during implementation of the cancer treatment and concentrated cancer treatment programs.
3. prevent and manage problems occurring due to the cancer or treatment.
4. provide symptomatic management for individuals with relapsed or advanced stage cancers and providing physical, psychological and social support
5. deliver care taking to ensure that the most appropriate cancer care services are provided.
6. assess nursing practices in terms of cancer care and to conduct research.
7. describe Principles and practices of oncology nursing
8. provide Systemic therapy and nursing to oncology patients
9. provide Radio therapy and nursing to oncology patients

**Course Content**

S/No	Topics/Lessons	Teaching /Learning hours	
		Lecture	Practical Demonstration
1	Principles & Essential contents of preoperative nursing	10	10
2	Preoperative assessment	10	15
3	Anesthesia & Preoperative nursing consideration	05	05
4	Post-operative care & monitoring	10	10

5	Pre-operative emergency management	05	05
6	Post-operative emergency management	05	10
7	Preoperative cardiac arrest and resuscitation	05	10
8	Principles and practices of oncology nursing	05	10
9	Common cancer and nursing preoperatively	05	10
10	Systemic therapy and nursing	05	05
11	Radio therapy and nursing	05	05
12	Preoperative management of diabetic patient	05	10
13	Preoperative care of unconscious patient	05	10
14	Preoperative care of hypertensive patient	05	10
15.	Preoperative care of RTA patient	05	10
16.	Preoperative care of patient with Bronchial asthma	05	05
17.	Management of preoperative shock temperature and post anesthetic shivering	05	10
	Total:	100	150

#### Teaching Methods

1. Lecture
2. Practical demonstration

#### Media:

Multi media  
Laptop  
OHP  
White board/Marker  
Laboratory

#### Assessment:

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

### CLASS PERFORMANCE RECORDS

#### PERIOPERATIVE & ONCOLOGY NURSING (DIPLOMA IN INTENSIVE CARE TECHNOLOGY COURSE) 3<sup>rd</sup> YEAR

S/No	Topics/Lessons	Date	Marks obtained	Signature of the Teacher
1	Essentials of preoperative care			
2	Preoperative assessment			
3	Postoperative care and monitoring			
4	Management of RTA patient			
5	Preoperative cardiac arrest			
6	Preoperative hypotension			
7	Delayed recovery from anesthesia			
8	Preoperative shock			
9	Post-operative unconsciousness			
10	Post-operative respiratory distress			

## Paper III : Clinical Procedures

**Total 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 of clinical procedures, the students should be able to

1. acquire /Gather practical knowledge about the management of critically ill patient.
2. they become practically oriented and can do their job effectively.
2. orient practically to do their job effectively.
3. acquire knowledge about the practical procedures of critically ill patient
4. assist in all practical procedures of critically ill patient

### List of Competencies

#### At the end of course CARDIAC

Ability to--

1. apply leads for cardiac monitoring.
2. identify, interpret and monitor cardiac rhythms.
3. assist in establishing Central venous access.
4. monitor hemodynamic status, and recognize signs and symptoms of hemodynamic instability.

#### RESPIRATORY

Ability to--

1. interpret arterial blood gas results.
2. **do** Pulmonary therapeutic interventions related to mechanical ventilation
  - Airway clearance - Intubation - Weaning
  - Extubation
  - Respiratory monitoring devices (e.g., SPO<sub>2</sub>, SVO<sub>2</sub>, ) and report values
  - Tracheostomy with mechanical ventilation.
  - Bronchoscopy

#### HEMATOLOGY

Ability to--

1. manage patients receiving transfusion of blood and blood products.
2. monitor patients and follow protocols related to blood conservation
3. assist bone marrow aspiration
4. assist & maintain Central venous catheter
5. monitor patients and follow protocols pre-, intra-, post-intervention for hematology and immunology problems

#### GASTROINTESTINAL

Ability to--

1. monitor patients and follow protocols for pre-, intra-, post-procedure for gastrointestinal problems
2. administer parenteral feedings and monitor patient's tolerance.

## RENAL

Ability to--

1. recognize indications for and manage patients requiring renal therapeutic intervention (e.g., hemodialysis, CRRT, peritoneal dialysis)
2. manage patients receiving electrolyte replacement
3. monitor patients and follow protocols pre-, intra-, post-renal procedure (e.g., renal biopsy, ultrasound).
4. perform catheterization in critically ill patients

## NEUROLOGIC

Ability to--

1. monitor patients and follow protocols for neurologic procedures (e.g., pre-, intra-, post-procedure) eg. **Lumber puncture**
2. recognize indications for and monitor/manage patients requiring neurologic monitoring devices and drains (e.g., ICP, ventricular drain).

## TRAUMA/BURN

Ability to--

1. participate in performing the primary and secondary survey of a trauma or burn patient.
2. describe how ABCDE is used in thoroughly assessing the trauma patient for abnormal findings.
3. assist in performing emergent interventions for patients with abnormal assessment findings e.g., intubation, fluid resuscitation, preparation for surgery.

## Course content

S/No	Topics/Lessons	Teaching /Learning hours	
		Lecture	Practical/ Demo
1.	Interventional procedures in ICU	05	10
2.	Endotracheal intubation, securing and care of endotracheal and tracheal tube	10	15
3.	Insertion of intravenous line and care of intravenous line	10	10
4.	Insertion of central venous catheter and securing and care of central venous catheter	10	15
5.	Percutaneous tracheostomy	10	10
6.	Bronchoscopy	10	10
7.	Lumber puncture	05	05
8.	Bone marrow aspiration	05	10
9.	Dialysis- haemo-dialysis, peritoneal dialysis, CRRT	05	10
10.	Laboratory investigations in ICU – Drawing blood sample for various lab investigations cultures, ABG analysis	10	15
11.	Catheterization, suprapubic cystotomy and catheter care	05	10
12.	Cooling and warming of patients	05	10
13.	Invasive monitoring of patients- intra-arterial, intra cranial, intra-abdominal	05	10
14.	Intra-aortic balloon pumping	05	10
	TOTAL=250 HOURS	100	150

**CLASS PERFORMANCE RECORDS**

**CLINICAL PROCEDURE**  
**(DIPLOMA IN INTENSIVE CARE TECHNOLOGY COURSE)**  
**3<sup>rd</sup> YEAR**

<b>S/No</b>	<b>Topics/Lessons</b>	<b>Date</b>	<b>Marks obtained</b>	<b>Signature of the Teacher</b>
1.	Interventional procedures in ICU			
2.	Central venous catheter			
3.	Tracheostomy and bronchoscopy			
4.	Bone marrow aspiration			
5.	Intravenous line establishment			
6.	Total parenteral nutrition			
7.	Intra-aortic ballooning			
8.	Catheterization and its care			
9.	Intravenous line establishment			
10.	Central venous catheter repeatation			
11.	Laboratory investigations in ICU - Drawing blood sample for various lab investigations & cultures			
12.	ABG analysis			
	Average marks secured 20%=			

**Assessment:**

Written – SAQ= 80 marks, MCQ=20 marks

Practical or OSPE 40 marks, Oral/SOE-40 marks, Formative-20 marks

## 4<sup>th</sup> year

### Paper I: ICU Management

**Total 400 hours**

**Lecture: 100 hours**

**Practical: 150 hours**

**Special Lab Attachment : 150**

**Total Marks – 200**

**Written – 100**

**Oral -40**

**Practical – 40**

**Formative – 20**

#### Objectives

At the end of the course of ICU management and maintenance, the students should be able to

1. elicit trends and issues related to Critical Care Nursing.
2. describe the epidemiology, etiology, pathophysiology and diagnostic assessment of critically ill patients.
3. describe the various drugs used in critical care and the ICA's /nurse's responsibility.
4. demonstrate advance skills/ competence in managing critically ill patients including advance Cardiac Life Support.
5. demonstrate skills in handling various equipment/ gadgets used for critical care.
6. apply nursing process in the care of critically ill patients.
7. enhance team work and coordinate activities related to patient care.
8. practice infection control measures.
9. basics of sterilization, sterilization of different equipment of ICU.
9. assess and manage pain.
10. discuss the legal and ethical issues in critical care nursing.
11. assist in various diagnostic, therapeutic and surgical procedures
12. incorporate evidence based nursing practice and identifies the areas of research in the field of critical care nursing.
13. identify the sources of stress and manage burnout syndrome among health care providers
14. maintain medical gas and pipeline system
15. follow the principles and techniques of monitored anesthetic care & sedation in ICU
16. perform physiotherapy in ICU following basic principles and techniques
17. teach and supervise nurses and allied health workers.
18. design a layout of ICU and develop standards for critical care nursing practice.

#### List of Competencies

##### At the end of course

Ability to--

1. describe the epidemiology, etiology, pathophysiology and diagnostic assessment of critically ill patients.
2. describe the various drugs used in critical care and the ICA's /nurse's responsibility.
3. demonstrate advanced skills/ competence in managing critically ill patients including advance Cardiac Life Support.
4. handle & maintain skillfully various equipment/ gadgets used for critical care.
5. apply nursing process in the care of critically ill patients.
6. enhance team work and coordinate activities related to patient care.
7. practice infection control measures.
8. apply knowledge of sterilization in sterilizing different equipment of ICU.
9. assist in various diagnostic, therapeutic and surgical procedures.
10. do critical care nursing legally and ethically

## Course content

S/No	Topics/Lessons	Teaching /Learning hours	
		Lecture	Practical Demo
1.	Intensive care unit type, setup, channel of command and maintenance	5	5
2.	Maintenance of equipment in ICU	3	5
3.	Maintenance of ventilators, monitors and defibrillator	3	5
4.	Maintenance of other equipment – dialysis machine, bronchoscope, endoscope machine, X-Ray machine and laboratory equipment	4	10
5.	Maintenance of bed area environment	5	10
6.	ICU safety alarm system, electricity system, air conditioning system, laminar flow system	4	5
7.	Cross infection and maintenance of sterility in ICU	3	5
8.	Dialysis machine operation and maintenance	3	5
9.	Noninvasive monitoring in ICU, principles of operations and maintenance of noninvasive monitors	6	10
10.	Invasive monitoring in ICU, principles of operations and maintenance of invasive monitors	6	5
11.	Physiotherapy in ICU, role, basic principles and techniques	5	10
12.	Principles and techniques of monitored anesthetic care	5	10
13.	Principles and technique of sedations in ICU	5	5
14.	Ventilators- types, basic modes, operations of ventilators, humidifiers, assembly and disassembly of circuit	7	10
15.	Various mask, airways, nebulizers used in ICU, principles and technique of their uses	3	5
16.	Medical gas and pipeline system	6	5
17.	Defibrillator – basic principles of operation, uses, maintenance of functionality	5	10
18.	Understanding lab investigations, sample collection, preserve and transport	4	5
19.	Monitored anesthetic care, safe patient transport	5	5
20.	Preparation of various drugs and instrument trolley in ICU	5	5
21.	Basics of sterilization, sterilization of different equipment of ICU	5	10
22.	CSSD	3	5
	<b>Total=250</b>	<b>100</b>	<b>150</b>

**ICU MANAGEMENT AND MAINTENANCE**

**(INTENSIVE CARE TECHNOLOGY COURSE)**

<b>S/No</b>	<b>Topics/Lessons</b>	<b>Date</b>	<b>Marks obtained</b>	<b>Signature of the Teacher</b>
1.	ICU setup and maintenance			
2.	Maintenance of equipment in ICU			
3.	Maintenance of ventilators, monitors, defibrillator, X-Ray machine and other equipment			
4.	Invasive and noninvasive monitoring			
5.	Use of various type of ventilators			
6.	Monitored Anesthesia Care (MAC)			
7.	ICU environment			
8.	Lab investigation and sample collection			
9.	Caring of medical gas			
10	Cross infection and maintenance of sterility in ICU			
11.	Patient transportation			
12.	Physiotherapy			
13.	Basics of sterilization, sterilization of different equipment of ICU			
14.	CSSD			
	Average marks secured 20%=			

**Assessment:**

Written – SAQ= 80 marks, MCQ=20 marks

Practical or OSPE 40 marks, Oral/SOE-40 marks, Formative-20 marks

## Paper II: Critical Patients Care

**Total 400 hours**  
**Lecture: 100 hours**  
**Practical: 150 hours**  
**Special Lab Attachment : 150**

**Total Marks – 200**  
**Written – 100**  
**Oral -40**  
**Practical – 40**  
**Formative – 20**

### Objectives

At the end of the course of critical care (patients nursing management) and protocols, the students should be able to

- 1 review the evidence from controlled trials of clinical decision support systems (CDSSs) on clinician performance and patient outcomes.
- 2 perform and organize needful management of various medical and surgical emergencies.
- 3 acquaint themselves with the thrombolytic, infusion of inotropes, vasodilator protocol

### List of Competencies:

#### At the end of course

1. assist or Perform and organize needful nursing management of various medical and surgical emergencies.
2. acquaint themselves with the thrombolytic, infusion of inotropes, vasodilator protocol.
3. provide nursing care & 1<sup>st</sup> line management of convulsion & bleeding
4. provide nursing management for Enteral nutrition, Total parenteral nutrition (TPN)
5. provide nursing management for pain, poisoning and unconscious patient

### List of Competencies

#### At the end of course

Ability to--

1. perform and organize needful nursing management of various medical emergencies such as shock, heart attack and organ failure
2. perform and organize needful nursing management of various surgical emergencies such as burn, RTA, head & spinal injuries and bed sore.
3. assist (Acquainted themselves with) the thrombolytic, infusion of inotropes, vasodilator protocol
4. provide nursing management for Enteral nutrition, Total parenteral nutrition (TPN)
5. provide nursing management for pain, poisoning and unconscious patient

### Course content

S/No	Topics/Lessons	Teaching /Learning hours	
		Lecture	Practical Demo
1.	Diet and nutrition in ICU, calculation of calorie requirement	4	10
2.	Enteral nutrition	3	7
3.	Total parenteral nutrition (TPN)	3	7
4.	Nursing management of trauma and head injuries	3	6
5.	Nursing management of patient receiving ventilator support	4	5
6.	Nursing management of shock	4	5
7.	Nursing management of MODS and MOF	4	5
8.	Nursing management of Burn patients	4	5
9.	Nursing management of spinal injury	4	5
10.	Nursing management of medical emergency	4	5
11.	Nursing management of surgical emergency	4	5

12	Nursing management of electrolytes imbalance	3	5
13	Nursing management of unconscious patient	3	5
14	Nursing management of pain	3	5
15	Nursing management of poisoning	4	5
16.	Nursing management of diabetes and diabetic emergencies	5	10
17	Nursing management of renal failure	4	5
18	Nursing management of respiratory failure	4	5
19	Nursing management of IHD, hypertension and heart failure and heart failure	3	5
20	Nursing management endocrine diseases and emergencies	3	5
21	Nursing management of bed sore	3	5
22	Nursing management of convulsion	4	5
23	Nursing management of GIT bleeding	4	5
24	ACLS protocol	4	5
25	Thrombolytic agent infusion protocol	4	5
26	Inotropic and presser agent infusion protocol	4	5
27	Vasodilator infusion protocol	4	5
	TOTAL=250 hours	100	150

**CLASS PERFORMANCE RECORDS**

**CRITICAL CARE PATIENTS NURSING MANAGEMENT AND PROTOCOLS**  
**(INTENSIVE CARE TECHNOLOGY COURSE)**

S/No	Topics/Lessons	Date	Marks obtained	Signature of the Teacher
1.	Diet and nutrition in ICU, calculation of calorie requirement – Enteral nutrition and TPN			
2.	Unconscious patient			
3.	Diabetic ketoacidosis			
4.	Cardiac arrest			
5.	Central chest pain			
6.	Respiratory failure			
7.	Ventilator support patient caring			
8.	Renal failure			
9.	Multi organ dysfunction syndrome			
10	Thrombolytic, inotropic, vasopressor use			
11.	Defibrillator and vasodilator use			
	Average marks secured 20%=			

**Assessment:**

Written – SAQ= 80 marks, MCQ=20 marks

Practical or OSPE 40 marks, Oral/SOE-40 marks, Formative-20 marks

## **Outline of Institutional Academic Laboratory**

### **Instruments for Academic Institutional Laboratory**

1. Airway tube
2. Endotracheal tube
3. Nasogastric tube
4. Catheter
5. I/V cannula
6. Butterfly needle
7. Disposable syringe
8. Infusion set
9. Transfusion set
10. Blood pressure machine
11. Stethoscope
12. Laryngoscope
13. Pulse oxymeter
14. Nebulizer machine
15. Micropore
16. Instrument tray
17. Kidney tray
18. Glucometer with strip
19. Nasal cannula
20. Face mask
21. Nasal prong
22. AMBU bag (Artificial Manual Breathing Unit)
23. Partial rebreathing mask
24. Gloves and gowns
25. Salines - 5%DA, DNS, Junior saline, Baby saline, NS, Cholera saline, Hartmann solution
26. Injections- Adrenaline, Dopamine, Dobutamine, Calcium gluconate, Distilled water.

### **At the Academic Institutional Laboratory, students should acquire the following competencies/activities--**

1. Indications of the above mentioned instruments.
2. How to wash hands, wear sterile gloves and gowns before entering ICU.
3. How to use infusion and transfusion set.
4. How to measure blood pressure.
5. How to assemble a laryngoscope.
6. How to use a pulse oxymeter.
7. How to use a nebulizer machine.
8. How to arrange instrument and kidney tray.
9. How to use a glucometer.
10. How to apply different masks.
11. How to use AMBU bag.
12. How to use disposable syringe.

## Outline of Special Lab Attachment

### Facilities in ICU for clinical placement

First choice- Tertiary level ICU/Level-3 ICU.

If not available- Secondary level ICU/Level-2 ICU.

If not available- Primary level ICU/Level-1 ICU (Minimum requirement).

#### Tertiary Level ICU/ Level -3

Serial no.	Name of equipment	Number
1	Bedside Monitors (For ICU)	One per bed
2	Ventilators Large LED monitor for visualization with alarm system. 1 portable ventilator	In cases of 5 beded ICU need 1 extra machine
3	Syringe Pumps	6 per bed in ICU
4	Defibrillator	1 for 5 patients
5	ICU Beds	One for each bed
6	Over Bed Tables	One for each bed
7	Bed side locker	One for each bed
8	ABG Machine, Biochemistry Analyzer, Electrolytes machine	One +one+one
9	Resuscitation trolley	1 for 5 bed
10	Pulse Oxymeter	Two
11	Freeze	Two (one for staff)
12	Computers	Two
13	Hemodialysis Machines	1 For 5 bed
14	CRRT (Optional)	One
15	Intermittent Leg Compressing Machine	Alternative bed
16	Air matrix	All bed
17	Video laryngoscope/ Fiber optic laryngoscope (Optional)	One
18	Glucometer	Two
19	ICU Dedicated Ultrasound with colour doppler	One
20	Bedside X ray (Portable)	One
21	Autoclav unit	One
22	Stand	2 per bed
23	Instrument tray, kidney tray	As much as
24	Self Resuscitator bag	One in each Resuscitation trolley
25	Fibroptic Bronchoscope	One

#### Secondary level ICU/Level-2

Serial no.	Name of equipment	Number
1	Bedside Monitors (For ICU)	One per bed
2	Ventilators Large LED monitor for visualization with alarm system. 1 portable ventilator	In cases of 5 beded ICU need 1 extra machine
3	Syringe Pumps	2 per bed in ICU
4	Defibrillator	1 for 5 patients

5	ICU Beds	One for each bed
6	Over Bed Tables	One for each bed
7	Bed side locker	One for each bed
8	ABG Machine, Biochemistry Analyzer, Electrolytes machine	One +one+one
9	Resuscitation trolley	1 for 5 bed
10	Pulse Oxymeter	Two
11	Freeze	Two (one for staff)
12	Computers	Two
13	Hemodialysis Machines (Optional)	One
14	Intermittent Leg Compressing Machine	Two
15	Air matrix	All bed
16	Glucometer	One
17	Bedside X ray (Portable)	One
18	Autoclav unit	One
19	Stand	2 per bed
20	Instrument tray, kidney tray	As much as
21	Self Resuscitator bag	One in each Resuscitation trolley

### Primary level ICU/Level-1 ICU

Serial no.	Name of equipment	Number
1	Bedside Monitors (For ICU)	One per bed
2	Ventilators Large LED monitor for visualization with alarm system. 1 portable ventilator	In cases of 5 beded ICU need 1 extra machine
3	Syringe Pumps	1 per bed in ICU
4	Defibrillator	One
5	ICU Beds	One for each bed
6	Over Bed Tables	One for each bed
7	Bed side locker	One for each bed
8	Resuscitation trolley	One
9	Pulse Oxymeter	Two
10	Glucometer	One
11	Stand	2 per bed
12	Instrument tray, kidney tray	As much as

**At the end of this course,**

Students will acquire knowledge, skill & proper attitude about technical support to :

- a. Ventilator
- b. Monitors and pulse oxymeter
- c. Infusion pump
- d. Defibrillator
- e. Portable X- ray machine
- f. Dialysis machine.
- g. Laboratory equipments.

Students will acquire skills on :

- a. Intravenous cannulation, maintain proper medication,
- b. Endotracheal intubation
- c. Central venous cannulation
- d. Peritoneal dialysis
- e. Regular check up of vital parameters
- f. Giving proper physiotherapy to the patient.

## **Job Description of Diploma Intensive Care Technologist**

### **General Jobs**

#### **1. ICU safety.**

a) **Safety of the ICU staff**

Technologists and other lab Staff should be properly immunized.

Take measures for proper immunization of Technologists and other lab Staff

Wears proper and protective dress and remain alert about personal protection.

b) **Safety of the patient**

Maintain safety measures in every individual procedure. Keep arrangements of First Aid for emergency situations and complications.

c) **Safety of equipment and instruments**

Ensure cleanliness and maintains the ICU equipment, apparatus and glassware according to manual and instructions by senior /subordinate staff.

d) **Arrangements and security of the ICU.**

Ensures proper setting up of furniture, equipment and instruments

Supervise and maintain the ICU, an appropriate security measures to be ensured by ICU staff.

e) play role in data collection, record and routine audit.

#### **2. Commitment to the patient.**

a) Should well behave properly with the patients and attendants.

b) Explain procedures and consequences to the patients and their attendants.

c) Do Motivation and counseling where and when needed.

d) Take consent of the patients and attendants where needed.

e) Maintain privacy of the patient.

#### **3. Handling of poisonous and infected materials.**

a) Proper labeling and storage of infected and poisonous materials.

b) Proper handling of the body fluid and other discharges as per instructions.

#### **4. Continuous updating of professional knowledge about intensive care procedures—practical and theoretical.**

5. Responsible for inter-departmental coordination and co-operation.

6. Arranges safe disposal of used and infected materials.

7. Responsible for maintenance of standard services in all aspects of Intensive care activities.

8. Preparing indents, collection of logistics, maintenance of ledger/register and reporting.

9. Supervision and training of junior colleagues.
10. Keep up-to-date about pharmacology of commonly used medicines in ICU.

### **Specific Jobs**

1. Proper registration of patient in details
  - a. Name, age sex, religion
  - b. Occupation, address
  - c. present problem
  - d. past problem if any
2. Maintenance of all equipment, instruments, materials such as
  - a. Ventilator
  - b. ICU bed
  - c. Defibrillator
  - d. ABG machine
  - e. All drugs
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
  - a. Register of patient
  - b. Treatment records
  - c. Expired patient records
5. Prepare indents
6. Provide health education and motivation of the patients. Give pre and post-operative care to the patient when needed.
  - a. Preoperative care**
    - I. Assure the patient
    - II. Check whether the patient has taken medicine before operation as advised by the anesthesiologist.
    - III. Ensure the patient's preparation as per the advice of the Anesthesiologist
  - b. Postoperative care**
    - I. If the patient is on mechanical ventilation the proper taking care of the airway and breathing of the patient.
    - II. Proper care of non-ventilated patient
7. Give bed side assistance to anesthesiologist during
  - a. Establishment of artificial ventilation by ventilator
  - b. Establishment of central venous line
8. Supervision & guidance of junior colleagues
9. Proper maintenance of ICU room, sterilization of instrument, cotton gauze and other essentials.
10. Maintain patient appointment.
11. Acquire knowledge about manipulation of different types of anesthetic materials such as laryngoscope, tracheal tube, ventilators etc.
12. First aid emergency management and advise necessary medicine
13. Acquire knowledge about technical support to
  - a. Ventilator
  - b. Monitors and pulse oxymeter
  - c. Infusion pump
  - d. Defibrillator
  - e. Portable X- ray machine
  - f. Dialysis machine.
  - g. Laboratory equipment.

14. Acquire skills on
  - a. Intravenous cannulation, maintain proper medication,
  - b. Endotracheal intubation
  - c. Central venous cannulation
  - d. Peritoneal dialysis
  - b. Regular checkup of vital parameters
  - c. Giving proper physiotherapy to the patient.

**Job at Teaching Institute** At the teaching institutes the Intensive care technologist personnel are positioned at three levels.

1. **Lecturers.**
  - a. They shall perform small group teaching in tutorial, demonstration and practical classes.
  - b. Facilitated practical demonstration and work of the students in the intensive care room as facilitator of practical teaching group.
  - c. Senior lecturers can perform large group teaching as well.
2. **Instructors.**
  - a. They will perform tutorial and demonstration classes relevant to practical items.
  - b. Ensure and guide the student to prepare practical note books.
  - c. Demonstrate elaborately procedures and method of practical works in the intensive care and follow students' performance in the practical classes.
  - d. Supervise practical classes as a team leader.
3. **Technologist.**
  - a. They shall perform practical in all practical classes.
  - b. Run practical demonstration and works for the students.
  - c. Perform small group demonstration relevant to practical.
  - d. Responsible for intensive care room set up and organization including maintenance of registers, records and stock ledger under guidance of supervisor.
  - e. Responsible for the security and safety of the intensive care room specially in respect to maintenance, infection, fire, electrical hazards and disposal of wastes.