DEPARTMENT OF PUBLIC HEALTH AND INFORMATICS
JAHANGIRNAGAR UNIVERSITY
SAVAR, DHAKA-1342, BANGLADESH

Email: dphi@juniv.edu Web: www.phiju.edu.bd

Semester System

Academic Curriculum for the Bachelor of Public Health (BPH), Honours in Public Health and Informatics, 2020

Academic Sessions: ***2020-21, 2021-22 and 2022-2023***

DEPARTMENT OF PUBLIC HEALTH AND INFORMATICS
JAHANGIRNAGAR UNIVERSITY
SAVAR, DHAKA, BANGLADESH
Email: dphi@juniv.edu Web: www.phiju.edu.bd

Syllabus of Bachelor of Science (BPH), Honours in Public Health and Informatics for Academic Sessions: *2020-21, 2021-22 and 2022-2023*

A. Summary of the program:

Description	Part I		Part II		Part III		Part IV		Total
	S1	**S2**	**S1**	**S2**	**S1**	**S2**	**S1**	**S2**	
Theoretical 3 Credits Courses	04	04	05	05	04	04	03	04	**99**
Theoretical 2 Credits Courses	01	01	00	00	01	02	03	01	**18**
Practical Related Courses- 2 Credits	01	02	02	02	02	01	01	01	**24**
Field Related Courses – 2 Credits	01	01	00	01	00	00	01	00	**08**
Project Work/Internship	00	00	00	00	00	00	00	01	**03**
Viva voce	02	02	02	02	02	02	02	02	**16**
Course per Semester	08	09	08	09	08	08	09	08	
Credits per Semester	**20**	**22**	**21**	**23**	**20**	**20**	**21**	**21**	**168**

B. List of the courses:

Part 1

	Semester I	
	Course Title	**Credits**
PHI 1101	Introduction to Public Health	3
PHI 1102	Human Anatomy	3
PHI 1103	Human Physiology	3
PHI 1104	Medical Anthropology	3
PHI 1105	Functional English	2
PHI 1106	Practical: Human Anatomy	2
PHI 1107	Fieldwork: Public Health Related Programs	2
PHI 1108	viva voce	2
Total		**20**
	Semester II	
		Credits
PHI 1201	Basic Biochemistry	3
PHI 1202	Epidemiology I	3
PHI 1203	Biostatistics	3
PHI 1204	Fundamentals of Health Informatics	2
PHI 1205	Demography and Public Health	3
PHI 1206	Practical: Biochemistry	2
PHI 1207	Practical: Health Informatics	2
PHI 1208	Field Work: Demography and Public Health	2
PHI 1209	Viva Voce	2
Total		**22**

Part II

	Semester I	
		Credits
PHI 2101	Mental Health	3
PHI 2102	Pathology	3
PHI 2103	Reproductive and Child Health	3
PHI 2104	GIS and Remote sensing in public health	3
PHI 2105	Public Health Genetics	3
PHI 2106	Practical: Reproductive and Child Health	2
PHI 2107	Practical: GIS and Remote sensing in public health	2
PHI 2108	Viva Voce	2
Total		**21**
	Semester II	
		Credits
PHI 2201	Public Health Microbiology	3
PHI 2202	Occupational Health	3
PHI 2203	Ecology and Public health	3
PHI 2204	Medical Entomology	3
PHI 2205	Biostatistics and Bioinformatics	3
PHI 2206	Practical: Public Health Microbiology	2
PHI 2207	Field Work: Occupational Health	2
PHI 2208	Practical: Biostatistics and Bioinformatics	2
PHI 2209	Viva Voce	2
Total		**23**

Part III

	Semester I	**Credits**
PHI 3101	Public Health Nutrition	3
PHI 3102	Environmental Health	3
PHI 3103	Communicable and Non-Communicable Diseases	3
PHI 3104	Research Methodology	3
PHI 3105	Zoonosis and Ethology	2
PHI 3106	Practical: Environmental Health	2
PHI 3107	Practical: Research Methodology- Capstone Project	2
PHI 3108	Viva Voce	2
Total		**20**
	Semester II	
		Credits
PHI 3201	Immunology	3
PHI 3202	Health Economics	3
PHI 3203	Software Application in Public Health	2
PHI 3204	Climate Change and Health	3
PHI 3205	Community Health	2
PHI 3206	Pharmaco-epidemiology	3
PHI 3207	Practical: Database Management System in Public Health	2
PHI 3208	Viva Voce	2
Total		**20**

Part IV

	Semester I	**Credits**
PHI 4101	Hospital Management	3
PHI 4102	Health Policy and Planning	3
PHI 4103	Health Education and Health Promotion	3
PHI 4104	Disaster and Public Health Preparedness	2
PHI 4105	Gerontology: Bangladesh Perspectives	2
PHI 4106	Bio-safety, Bioethics and Health Rights	2
PHI 4107	Practical: Health Education and Health Promotion	2
PHI 4108	Field Work: Health Aspects of Climate Change and Disaster	2
PHI 4109	Viva Voce	2
Total		**21**
	Semester II	
		Credits
PHI 4201	Water, Sanitation and Hygiene	2
PHI 4202	Epidemiology- II	3
PHI 4203	Food Safety and Health	3
PHI 4204	Data Science in Public Health	3
PHI 4205	Global Health	3
PHI 4206	Practical: Data Analysis and Data Management	2
PHI 4207	Seminar: Research Project/ Internship	3
PHI 4208	Viva Voce	2
Total		**21**

Course Details for Part-I BPH (Hons); Semester-I Examination

<table>
<tr><td colspan="2">PHI 1101: Introduction to Public Health</td><td>Credit Hour: 03</td><td>Marks: 100</td></tr>
<tr><td colspan="4">Rationale: Rationale: For exposure of the students to Public Health, a distinctive field of knowledge, this course is designed where, as a Biological being, Human being is in the centre and interacting with the eco-system, society, culture and economy. How health and wellbeing from antiquity to present time encompassed so many perspectives and evolved to cope up with the adverse environment collectively? This course will assist the public health students to find out the answers. Theory, Methodology and Paradigm of Public Health will help the learner to lay foundation stone of public health specialist.</td></tr>
<tr><td colspan="4">Course Objectives: This course will help the students to –

1. clarify the concept of health and public health. Students will able to understand the locus of anthropology in the kingdom animalia and the role of society, culture in positive health;
2. know the historical Trajectory of public health from curing disease to prevention of disease and searching promotion of health will be understandable to the young learner;
3. learn the causation of diseases and prevention of diseases within the framework of medical, social and environmental science and culture;
4. understand the immunity, adaptation, evolution of human and public health challenge of 21st century.</td></tr>
<tr><td colspan="2">Course Content</td><td colspan="2">Intended Learning Outcomes (ILOs)</td></tr>
<tr><td colspan="2"></td><td colspan="2">By the end of this course students will be able to –</td></tr>
<tr><td colspan="2">A. Introduction: Concept of public health; Public Health as a specialized field of knowledge; Interdisciplinary stands within the framework of medical science.</td><td colspan="2">1. Define health and public health; find out the areas of public health field and interdisciplinary stance.</td></tr>
<tr><td colspan="2">B. Concepts of Public, Health, Public Health and Anthropos: Concepts of public, community, composition, structure and function of society; Locus of Anthropos in the kingdom animalia.</td><td colspan="2">2.Find out the position of human being in the animal kingdom and living relationship in the ecosystem and understand the structure of public, community and society</td></tr>
<tr><td colspan="2">C. Historical trajectory: Origin of Public Health and its growth (Antiquity- to contemporary).</td><td colspan="2">3. Know the process of formation of concept of public health from antiquity to contemporary.</td></tr>
<tr><td colspan="2">D. Thoughts and contexts of preventive medicine: Theory of disease causation; Public Health Concepts- health, disease, illness, sickness, medical pluralism and health seeking behaviour.</td><td colspan="2">4. Understand the cause of diseases and thus able to take necessary preventive measure.</td></tr>
</table>

E. Concepts of health: Biological, ecological, psychiatry and holistic approach; WHO definition and its criticism; Modern concept of health.	5. Incorporate psyche, society and culture with physical problem for the health of the individual and of the community.
F. Perspective of preventive medicine: Cultural system, stressor, immunity, adaptation and human evolution.	6. Become a future public health specialist they will be able to understand the role of stressors, immunity, adaptation and culture in health and disease.
G. Public health challenges in 21st century: Climate change, disaster management and public health; Primary Health Care (PHC); Millennium Development Goal (MDG); Universal Health Coverage (UHC); Sustainable Development Goal (SDG); Nutrition and public Health.	7. Incorporate them about national and international program on public health and the challenge of 21stcentury.
Recommended Readings:	

1. Rahman, M., Alamgir, AKM. Hafez, MA. 2012 (5thed.). Rashid, KhabirHyder, Textbook of community medicine and public Health. MAH Publishers.
2. Park, K. 2011 (21sted). Textbook of preventive and social medicine. BanarsidasBhanot Publishers.
3. Sigerist, Henry E. 1987. A History Medicine, vol-1. Oxford university press.
4. Loretta DiPietro Julie Deloia Victor Barbiero Essentials of Public Health Biology (Essential Public Health) 1st Edition
5. Geoffrey Rose, Rose's Strategy of Preventive Medicine Updated Edition

PHI 1102: Human Anatomy	**Credit Hour: 03**	**Marks: 100**

Rationale: Knowledge of anatomy is a fundamental component of public health care profession Human anatomy is the study of the bones, joints, muscles, and systems of the human body. It also focuses on development of the human body, the standard naming, functions and clinical consideration. Through this course students will be introduced with a firm understanding of the general anatomy and development of the human body.

Course Objectives: This course will help the students to –

1. gain factual knowledge (anatomic terminology, structures of the human body);
2. utilize effectively the anatomic terminology;
3. become familiar with the structures of the human body;

4. appreciate the intricacy and complexity of the human body; 5. understand the basic structures and relationships of the human body, and be able to use this information in public health career.	
Course Contents	**Intended Learning Outcomes**
	By the end of this course students will be able to –
A. Embryology: Introduction, Gametogenesis; spermatogenesis; structure of sperm; oogenesis; structure of ovum; growth of ovarian follicles, ovarian and uterine cycles; Ovulation to implantation; Development to birth; Birth defects and prenatal diagnosis.	1. Demonstrate the basics of embryology and how it is influenced by other factors.
B. Tissue: Epithelial; Connective; Muscular; Nervous.	2. Know the function and characteristics of different types of tissue.
C. Introduction to Brain: Divisions of nervous system; Cellular architecture; Synapse, Neuroglial cells; Reflex arc; Parts of nervous system; Cerebrum; Cerebellum; Brain Stem; Limbic system; Thalamus; Hypothalamus; Cranial nerves; Neural pathway.	3. Demonstrate an understanding of the structure and function of the central and peripheral nervous system
D. Skull: Cranial fossa; Bones; Joints; Orbit; Osteology; Contents of Orbit; Eye ball; Lacrimal gland.	4. Demonstrate the name of the bones and joints of the skull and their functions.
E. Head and Neck: Ear; Nose; Face; Larynx; Pharynx; Parotid gland; Triangle of neck; Thyroid gland	5. Demonstrate the structures of maxillofacial region and their clinical importance in public health aspects.
F. Abdomen: Osteology of Abdomen; Abdominal wall; Abdominal cavity and peritoneum; Abdominal organs- abdominal parts of esophagus, stomach, and spleen; Duodenum; Pancreas; Liver and Biliary apparatus; Small and large intestine; Kidney; uterus and suprarenal glands.	6. Know the names of different regions of abdominal cavity and their contents.
G. Pelvis: Pelvic wall; Perineum; Urinary bladder and urethra; Rectum and Anal canal; Genital organs; Male and female external and internal genital organs.	7. Learn about the different organs of pelvic region and their functions.

H. Thorax: Thoracic wall; cavity and pleurae; lungs; mediastinum; heart and pericardium; trachea; esophagus and thoracic duct; great vessels.	8. Know about lung and associated structures for respiration and circulation.
I. Lower limb: Osteology of Lower limb; Joints of Lower limb Venous; Lymphatic and Innervations of lower limb; Thigh; Front of Thigh; Back of Thigh; Medial side of Thigh; Popliteal Fossa and gluteal region. Leg; Lateral side of leg; Back of Leg; Medial side of leg; Foot; Sole and arches of foot.	9. Know the name the bones and joints of lower limb, blood supply of lower limb.
J. Upper limb: Osteology of upper limb; Lymphatic and Innervations of Upper Limb, Joints of upper limb; Pectoral region; Scapular region, arms, forearm.	10. Demonstrate the name the bones, joints of upper limb, blood supply of lower limb.

Recommended Readings:

1. Gray, H., Carter, H.V. 2016. Gray's Anatomy (Descriptive and surgical). Create Space Independent Publishing Platform.
2. Standring S. 2015 (41th ed.). Gray's Anatomy: Clinical practice. Elsevier publisher.
3. Tortora G. J. 2013 (14th ed.). Principles of Anatomy and Physiology. Wiley publisher.
4. Singh, V. 2014 (2nd ed.). Textbook of Anatomy. Elsevier India.
5. Chaurasia, B. D. 2017 (6th ed.). Human Anatomy. CBS Publishers.
6. Sadler, T, W., Langman, Jan. 2012 (12th ed.). Langman's Medical Embryology. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins.
7. Mader, S. S., 1994 (8th ed.). Human Biology. McGraw-Hill.

PHI 1103: Human Physiology	Credit Hour: 02	Marks: 100

Rationale: The aim of this course is to enable participants to understand the aspects general and comparative physiology. The students will have acquired a sound knowledge of concepts and principles of physiology. This course introduces human physiology ranging from cellular structure to function of the whole human body. This course will correlate physiological processes in the body with health and disease.

Course Objectives: This course will help the students to –

1. understand General basis of human Physiology;
2. become familiar with the terminology related to Physiology;
3. understand functions of different systems of human body;
4. know the mechanisms involved in maintenance of body system and homeostasis;

5. critically understand human Physiology in relation to disease.	
Course Content	**Intended Learning Outcomes (ILOs)**
	By the end of this course students will be able to –
A. General basis of Physiology: Functional morphology of Cell; Cell Cycle; Intercellular communications; Homeostasis.	1. Know the cellular structure, functions and homeostasis
B. Circulatory system: Blood; blood cells; Haematopoiesis; serum; plasma; RBC, blood grouping; Rh-factor; Platelets; clotting factor; hemostasis; Coagulation; White Blood Cells; Innate Immune System; Functions; Adaptive Immune System; Functions; Lymph; Lymphatic circulation; Cardiac cycle.	2. Describe the main theoretical aspects of circulatory system.
C. Respiratory system: Mechanics of respiration; pulmonary circulation; Chemical control of breathing; Neural control of breathing; Respiratory adjustments in health and diseases.	3. Understand how respiratory system works within human body.
D. Digestive system: Structure and Histology; Digestive enzymes; Phases of Digestion ;Digestion of food components and absorption of digested products; Gut hormones; Chyme; Digestive juices; saliva, gastric juice, pancreatic juice; succus entericus (intestinal juice) and bile.	4. Understand structure and function of digestive system**.**
E. Hepatobiliary system: Structural organization and function of liver and gallbladder; Bile circulation and metabolism.	5. Learn about the structure and function of liver and gallbladder.
F. Urinary system: Kidney function; Electrolyte and acid-base balance of the body; Buffers of the cells; Renal Regulation of Acid-Base Balance; Regulation of extracellular fluid composition; Formation and excretion of urine.	6. Understand the basic concepts of kidney and buffer system of body.
G. Nervous system: Nerve cells; Ionic basis of excitation and conduction; Synaptic transmission; Sense; vision; hearing, equilibrium; smell; and taste; sense receptors; Neurotransmitter; Additional Senses; nociception; equilibrioception; proprioception; chronoception; thermoception; Autonomic nervous system; Hypothalamus and temperature regulation.	7. Learn the classification and functions of nervous system.

H. Endocrinology and Metabolism: Endocrine function of Thyroid; Pancreas; Adrenal Gland; Hormonal control of metabolism.	8. Learn endocrine function of major endocrine gland.
I. Reproductive system: Development and function of male reproductive system; female reproductive system; Puberty.	9. Understand the basic concepts of reproductive system.

Recommended Readings:

1. Mader, S. S., 2019, Human Biology. McGraw-Hill. 16 edition
2. Cindy Stanfield, 2016, Principles of Human Physiology ,6 edition, Pearson;
3. Kim E. Barrett , Susan M. Barman , Scott Boitano , Heddwen L. Brooks,2016,Ganongs Review of Medical Physiology,Mcgraw Hill Education, 25th Edition
4. Guyton and Hall, 2015. Textbook of Medical Physiology. 13 edition
5. Marieb EN and Hoehn K. 2010, Human Anatomy & Physiology. 8 Edition.

PHI 1104: Medical Anthropology	Credit Hour: 03	Marks: 100

Rationale: The purpose of this course is to draw attention to the growing field of medical anthropology. This course introduces medical anthropology ranging from biological to cultural, economic and psychosocial factors affecting individual and public health. Specifically, this course is designed to enrich the student's perspective on illness, health, and healing across cultures. Furthermore, the course would enable the students to use the methods, theories and insights of anthropology to understand current local and global health problems, politics and concerns. Students will be introduced to key theoretical concepts in the field of medical anthropology and gain a broad perspective regarding the applicability of the field in the world around us especially in the area of public health. Case studies will be taken from several locations around the globe. We will challenge the assumptions of our own ways of understanding, particularly the Western assumptions inherent to biomedical practice, and to broaden our knowledge of non-Western healing systems and multi-culturalism in Western contexts. Students will be asked for regular, well-informed debate within class meetings and discussions.

Course Objectives: This course will help the students to –

1. develop cross cultural understanding of the meaning of disease and illness;
2. introduce the major theoretical paradigms and perspectives, standard methods of research, and related case studies in the field of medical anthropology;
3. promote student examination of Western assumption inherent to biomedical practice, and to broaden their knowledge of non-Western healing systems as well as pluralism in the healing practices of peoples all over the world;

4. analyze critically about health care systems; 5. develop a genealogy of contemporary research in medical anthropology.	
Course Content	**Intended Learning Outcomes (ILOs)**
	By the end of this course students will be able to –
A. Introduction to Medical Anthropology: Origin; Background; Medical anthropology and public health; Medical anthropological response to recent public health crisis.	**1.** Demonstrate how medical anthropology can be utilized in a wide range of fields including the public health professions.
B. Understanding anthropology and medical anthropology: Definition; Development; Areas and scopes; Four-field approach; The concept of belief; Narrative, experience and phenomenology of sufferings; determinants of health.	2. Describe the main theoretical orientations and frameworks utilized in medical anthropology.
C. Basic concepts in medical anthropology in relation to public health: Human being/homo sapiens; Society; Culture; Kinship; Behaviour; Gender; Politics; Ecology; Disease; Illness; Health; Global health; Medical pluralism; Ethno-medicine; Epidemiology; Cultural epidemiology; Types of medical system.	3. Differentiate between illness and disease and understand the social epidemiological transitions behind the rise in new infectious diseases.
D. Perspectives in and approaches to Medical Anthropology: Bio-medical/ clinical perspectives; Ecological perspective of health and disease: People survival in a particular environment; Genetic, immunological and medical system to deal with the problem that affects health; Working model of ecology and health; Biological process of adaptation-arctic adaptation; Consuming energy and dietary pattern; Sickle cell anaemia and malaria; Stress and disease; Ethno-medical perspectives; Feminist perspectives; &Folk belief model, Cognitive model; Interpretive model.	4. Understand how health and illness are constructed across various cultures, and observe the impact of culture on health and illness.
E. Human growth and adaptation: Pelvis of bipedal human and head of their fetus; Brain and skull growth; Early delivery and early childhood nursing.	5. Understand the links between human biology and culture.
F. Health, Gender and body: Body; types; Normal vs. abnormal; Modern medicine and construction of women body (abortion, family planning and menopause). Gender, cultural ideology and different medical practices Social and cultural dimensions of infectious disease.	6. Analyze how gender, ethnicity, class, sexual orientation and body cultures inform health and disease outcomes.
G. Nutrition, poverty and health: Bio-medical Discourse	7. Learn about the ecology and

of Food and Nutrition: Cultural construction of food and nutrition; Factors determining nutrition such as food intake, child caring eating behavior and Socio-economic conditions; Political economy of nutrition. Ecology and economics of nutrition**:** Subsistence by hunting and gathering, farming, peasant farmers, over nutrition.	the economics of food and nutrition.
H. The Hospital Ethnography and interrogative biomedicine: Colonial and post-colonial context of disease and medicine; Institutionalization of bio-medicine in the Third World.	8. Analyze biomedicine as a cultural system.
I. Indigenous Health Knowledge: Culture of biomedicine; Western orthodox and indigenous medicine.	9. Synthesize the differences and similarities between alternative and complementary medicine, ethno-medicine and biomedicine.
J. Power, Bio-power, Knowledge and Medicine: Foucauldian formulation of medical gazes, discourse and power; Infection and inequalities; Race, Culture and Political economy of health and critical medical anthropology.	10. Understand how social, economic, and political power affect health outcomes
K. Pharmaceuticals and Production of drugs: Pharmacovigilence of drug business.	11. Describe and analyze the intervention of pharmaceutical claims about health business.
L. Contemporary issues in Medical Anthropology: Organ Transplantation; Trafficking of Human Organ; Infectious Disease; Mental Health; Disability; Medical Anthropology in Bangladesh.	12. Critically analyze the transition to global health in cross cultural perspective.

Recommended Readings:

1. Brown P. J. &Closser, S. 2016. Understanding and Applying Medical Anthropology. Paperback.
2. Kottak, C. P. 2018. Cultural Anthropology, McGraw-Hill Inc.
3. BearH. A. 2013. Medical Anthropology and the World System: Critical Perspectives. Paperback.
4. Lock M. and Nguyen V. K. 2018. An Anthropology of Biomedicine. Wiley-Blckwell.
5. Manderson, L., Cartwright, E. et al. 2018. The Routledge Handbook of Medical Anthropology (Routledge Anthropology Handbooks). Paperback.
6. Foucault, Michell 1994. The Birth of Clinic: An Archaeology of Medical perception: NY: Vintage Book.
7. McElroy A. & Townsend P. K. 2014. Medical Anthropology in Ecological Perspective. Paperback.
8. Singer, M. 2014. The Anthropology of Infectious Disease. Routledge.
9. Helman, C. G. 2007. Culture, Health and illness. Arnold publishers, London.
10. Singer, M., Baer, H. et al. 2019. Introducing Medical Anthropology: A Discipline in Action.

Paperback.
11. Wiley A. S. and Allen, J. S. 2016. Medical Anthropology: A Biocultural Approach. Paperback.

PHI 1105: Functional English	Credit Hour: 02	Marks: 100

Rationale: The grammar is introduced in context through the texts and further practice is provisioned through exercises. The course also helps students sharpen their reading, writing and listening skills through various texts and composition exercises. Additionally, the course will also introduce critical thinking skills and they will be given opportunities to practice those skills in class through a variety of texts and tasks which related with public health.

Course Objectives: This course will help the students to –

1. expose them to the variety of reading text;
2. develop writing skills for the academic work at undergraduate level;
3. develop listening capability of English language;
4. proficiency in spoken English;
5. help students produce grammatically correct;
6. develop the ability to think critically in analytical abilities of English language.

Course Content	Intended Learning Outcomes (ILOs)
	By the end of this course students will be able to –
A. Reading: Reading Comprehension for developing sub skills such as Scanning, Skimming, understanding contextual meaning, Inference, Predicting, Vocabulary Building and Summarizing. Reading and reviewing short texts (articles and passages which are related with Public Health Informatics, heath sectors, Diseases & Illness). Important cognitive terminologies and its application.	1. Identify and locate specific information in various types of texts and clarify main idea using a variety of strategies.
B. Writing: Important factors of writing: prewriting, outlining (drafting), revising, proofreading; Paragraph writing: Paragraph structure (topic sentence thesis statement, introducer, developers, modulators, terminator etc.)**;**different types of paragraphs (narrative,	2. Apply knowledge of English grammar when writing.

descriptive, argumentative, cause and effect, compare and contrast, process analysis paragraph); Transitional Devices/ Connectives, essay writing essay writing/ report writing on public health issues, letter writing/ application writing/ email writing: (cover letter, CV, letter of requesting reference, letter of seeking recommendation, acceptance letter).	
C. Listening: Listening to different forms of English TV news; talkshows; andtapescripts.	3. Develop and enrich listening part of English language.
D. Speaking: Social English; polite and formal expression (requesting, inviting, askingforhelp, givinginformation, greetingskey, introducingkeys, seekingpermission, askingforadvice, givingadviceorsuggestion, politeoffer, sayingbyeorbiddingfarewell); English in work places and daily conversation; asking and answering questions; role play.	4. Proficient in speaking section of English language.
E. Grammar: Component of sentence and semantic**;** parts of speech**;** Tense. right form of Verb; verb patterns**;** subject-verb and agreement**;** preposition**;** gerund & to be infinitive**;** linking word/ connectors**;** voice and its usage**;** parallel structure of sentence**;** clauses& phrases; The conjunctions and prepositions to suggest different relationships: time, space, cause, result, purpose, condition, exception, etc.; Remedial grammar: Identifying and correcting errors and weaknesses.	5. Identify and analyze the functions of: grammatical categories in English.
F. Cognitive Skills: Analytical abilities on how public health information is acquired, organized, and used through English Language; interactive usage of English language in order to understand issues in population-level disease surveillance and health outcomes; Use basic terminologies in public health	6. Develop a critical approach with regards to grammatical proficiency.
Recommended Readings:	

1. John Longan, 2011 (10th ed.), Skills in Language, McGraw-Hill Education, ISBN: 978-0073533308.
2. Q.M. Billah, G. S. Chowdhury & Monjurul Alam, 2014(2nd ed.) Foundation English for Undergraduate, Friend's Book Corner, ISBN: 9847002003407.
3. Maurice Imhoof and Herman Hudson, 1975 (Illustrated ed.), From Paragraph to Essay Developing, Composition Writing, Longman, London, Friend's Book Corner, ISBN: 9780582552326.
4. Chris M. Anson and Robert A. Schwegler, 2010 (6th ed.), Longman Guide for Writers and Readers- Longman Guide for Writers and Readers, Pearson Publisher, ISBN: 978-0205741953.
5. A.J. Thomson and A.V. Martinet, 1986 (4th ed.), A Practical English Grammar, Oxford University Press, ISBN: 0-19-431347-6.

PHI 1106: Practical: Human Anatomy	**Credit Hour: 02**	**Marks: 100**
Rationale: Theoretical knowledge of human anatomy needs to be supported by practical course work Practical work makes students independent and increases their confidence. It also promotes experiential learning. The practical section of this course will allow the students an opportunity to engage in hands-on activities through demonstrations using prosected cadavers, dissection, anatomical models and plastinated specimen.		
Course Objectives: This course will help the students to – 1. understand Location of the various structures in the body; 2. identify the gross structures of different organs in the body; 3. identify the microscopic structures of various tissues, and organs in the human body and correlate the structure with the functions as a prerequisite for understanding the altered state in various disease processes.		
Course Content	**Intended Learning Outcomes (ILOs)**	
	By the end of this course students will be able to –	
A. Surface Anatomy: Head, Neck, Brain; Abdomen, thorax, limbs Male and female reproductive system.	1. Demonstrate the shapes and markings on the surface of the body as they relate to deeper structures.	
B. Course, distribution, branches and functions of vessels and nerves: Head, Neck, Brain; Abdomen, thorax, limbs Male and female reproductive system.	2. Know The characteristics, components and functions of the vessels and nerves.	

C. Identification of structures: Head, Neck, Brain.Abdomen, thorax, limbs; Male and female reproductive system.	3. Know the identification of structures.
D. Origin, insertion and attachment of muscles: Head, Neck; Abdomen, thorax, limbs Male and female reproductive system.	4. .Demonstrate the structure, function, and clinical considerations.
E. Clinical anatomy: From Head, Neck, and Brain. Abdomen, thorax, limbs Male and female reproductive system.	5. Clinical significance of different organs.

Recommended Readings:

1. Singh, V. 2014 (2nded.). Textbook of Anatomy. Elsevier India.
2. Gray, H., Carter, H.V. 2016. Gray's Anatomy (Descriptive and surgical).
3. Chaurasia, B. D. 2017 (6thed.). Human Anatomy. CBS Publishers.
4. Netter, F. H. (2019). Atlas of human anatomy (7th Ed.). Philadelphia, PA: Saunders Elsevier
5. Krieger. 2013. A Visual Analogy Guide to Human Anatomy & Physiology 3rd ed. Morton Publishing, Englewood, CO.
6. Perez. 2008. Anatomy (Flash Cards). Bar Charts Publishing, Boca Raton, FL.
7. Kapit and Elson. 2013. Anatomy Coloring Book 12th ed. Pearson Education, Boston, MA.

PHI 1107: Fieldwork: Public Health Related Programs	**Credit Hour: 02**	**Marks: 100**

Rationale: The fieldwork of public health related programs focuses on developing the skills of the students who will advance public health, and wellbeing and promote community engagement, professional collaborations, evidence-based practice, and public heal100 advocacy. It supports the development of skills in basic public health concepts and assists in the demonstration of the application of these concepts through practice experience that is relevant to the students' areas of concentration and reflects understanding of the academic principles studied in class.

Course Objectives: This course will help the students to –

1. gain real-world public health experience while building public health skills and competencies through the observation and/or engagement in meaningful public health activities;
2. carry out a project representative of expected work in the field;
3. gain exposure to an organization's environment, culture and purposes;

4. demonstrate competence in research/practice/ evaluation relevant to the selected field; 5. develop professional judgment and contacts; and 6. help clarify career goals.	
Course Content	**Intended Learning Outcomes (ILOs)**
	By the end of this course students will be able to –
A. Health, Population & Nutrition Sector Development Program	1. Understand the ABC of Bangladesh government's health programs.
B. The Strategic Plan for Health, Population and Nutrition Sector Development Program (HPNSDP)	2. Know the strategic plan of a government health program
C. Program Implementation Plan (PIP) of Health, Population and Nutrition Sector Development Program.	3. Learn about the health program implementation
D. UNICEF/WHO/UNFPA/USAID Bangladesh Country Programmes.	4. Understand the ABC of health programs administered by UN organizations.
E. Public Health Programmes of ICDDR,B / BRAC /Dhaka Ahsania Mission /Engender Health / NGO Forum for Public Health / etc. in Bangladesh.	5. Know the ABC of health programs administered by local NGOs
Recommended Readings:	
1. Epidemiology and Demography in Public Health, Japhet Killewo Kristian Heggenhougen Stella R. Quah, 1st edition.	

PHI 1108: Viva Voce	**Credit Hour: 02**	**Marks: 100**

Course Details for Part-I BPH (Hons); Semester-II Examination

PHI 1201: Basic Biochemistry	Credit Hour: 03	Marks: 100

Rationale: This course aims to offer a fresh and stimulating approach to the biochemistry of life in which the students will be introduced that the living organisms are composed of numerous lifeless molecules; there are a set of principles that characterize all living organisms. The students should have acquired a sound knowledge of concepts and principles of biochemistry. The aim of this course is to correlate with cellular and molecular processes in the body and have a sound understanding of the biochemical basis of health and disease.

Course Objectives: This course will help the students to –

1. know the biomolecules and functional organization of a cell, and sub- cellular components;
2. learn the structure, function and interrelationship of biomolecules and consequences of deviation from normal;
3. understand the basic and clinical aspects of enzymology and regulation of enzymatic activity;
4. know digestion and assimilation of nutrients;
5. correlate the integration of the various aspects of metabolism, and their regulatory pathways;
6. learn biochemical basis of inherited disorders and their associated sequelae; and
7. understand the mechanisms involved in maintenance of body fluid and pH homeostasis.

Course Contents	Intended Learning Outcomes
	By the end of this course students will be able to –
A. Introduction: Definition and scope; Historical development, relationship of biochemistry with public health;Future prospects of biochemistry.	1. Know the basic information of biochemistry
B. Biological cell: Architecture, compartmentation, cell membrane structure and functions; structure- function relationships; Membrane transport.	2**.** Understand the biological cell
C. Biomolecules: Function and classification of carbohydrates, lipids, protein, amino acids; Stereoisomerism and chemistry of monosaccharide's, amino acids, and fatty acids; Structural organization and structure-function relationships of proteins. Hemoglobin and myoglobin, molecular	3. Know the structure and function of biomolecules.

mechanism of O_2 transport and storage. Molecular basis of sickle cell anemia and thalassemia's; Molecular mechanism of muscle contraction; Plasma proteins, their functions and clinical significance.	
D. Body Fluid, electrolyte, and acid-base balance: Total Body Water, Fluid Compartments and Measurement of their sizes, Composition of Body Fluids, Normal Water Balance and its Regulation, Major Electrolytes and their homeostasis, Hydrogen Ion Homeostasis, Renal Chemistry in relation to water, Electrolytes and Acid Base homeostasis, Renal Function tests.	4. Describe the role of body fluid, electrolyte and acid-base balance in health.
E. Enzymes: Nomenclature, classification; Kinetics, mechanism of enzymatic catalysis; Factors influencing enzymatic catalysis, enzyme activators and inhibitors; Regulation of enzyme activity; Clinical enzymology, isoenzymes.	5. Narrate the nomenclature, classification and regulation of enzyme activity.
F. Metabolic pathways, their regulation and metabolic interrelationships Metabolism: general concepts and characteristics of metabolic pathways. Carbohydrate metabolism; Pathways of glucose metabolism: glycolysis; HMP shunt; Gluconeogenesis; Glycogenolysis, glycogenesis; Glycogen storage disease; Inborn errors of glucose metabolism; Regulation of glucose metabolism.	6. Discuss the major metabolic pathways and regulation of carbohydrate metabolism.
G. Amino acid metabolism: General reactions, transamination, its metabolic and diagnostic significance; Disposal of amino acid nitrogen and detoxication of urea; Sulphur containing amino acids; In born errors of branched chain and aromatic amino acids.	**7.** Understand the basic concepts of amino acid metabolism.
H. Lipid metabolism: Biosynthesis and degradation of fatty acids, phospholipids and triacylglycerols; Biosynthesis of cholesterol, chemistry and metabolism of lipoproteins; Hyperlipoproteinemias; Lipid storage disease; Ketone bodies: their synthesis,	8. Introduce the students with the biosynthesis of different types lipid, their reactions and explain how they play important roles of the body system.

utilization and conditions leading to ketoacidosis, prostaglandin.	

Recommended Readings:

1. Colledge, N. R., Walker B. R. and Ratston S.R. (2010), Davidson's principles and practice of Medicine, 21st edition.
2. Michael M. C., David L. N. 2012. (5th ed.), Lehninger Principles of Biochemistry. W.H. Freeman publisher.
3. Jeremy M. B., John T. and Lubert Stryer. 2002 (5thed.). Biochemistry. W.H. Freeman Publishers, New York.
4. Rodwell**,** V. W., Bender**,** D. A., Botham**,** K. M., Kennelly,P., Weil**,** J. P. A. 2015 (29th ed.). Harpers Illustrated Biochemistry. McGraw-Hill Education.
5. Champe, P. C., Harvey, R. A., Ferrier, D. R. 2007 (4thed.). Lippincott's Illustrated Reviews: Biochemistry (Lippincott's Illustrated Reviews Series).Paperback publishers.
6. Palmer T, Bonner PL. Enzymes: Biochemistry, Biotechnology and Clinical Chemistry (2nd Ed.). Cambridge, Woodhead Publishing, Limited (2007).

PHI 1202: Epidemiology-I	**Credit Hour: 03**	**Marks: 100**

Rationale: The aim of this course is to enable participants to understand a range of epidemiological concepts as well as historical context, scope of epidemiology, common epidemiological terms, concepts and epidemiologic approach.

Course Objectives: This course will help the students to –

1. evaluate the contribution of epidemiological studies in specific areas of research, policy and practice in the areas of epidemiological methods;
2. demonstrate sophisticated interpretation and application of epidemiological methods and principles and explain their relevance to specific study designs;
3. know the causation of diseases and prevention of diseases;
4. learn the major theoretical perspectives and standard methods of epidemiological research; and
5. analyze critically about health care systems.

Course Content	**Intended Learning Outcomes (ILOs)**
	By the end of this course students will be able to –

A. Introduction to epidemiology: The historical context; Definition, components, scope and uses of epidemiology; Modern concept; Common epidemiological terms; Epidemiologic approach.	1. Understand concept, common epidemiological terms.
B. Causation of Disease: Ecological concept of disease; Spectrum of Disease; Epidemiological triad: agent, host and environmental factors; Modes of transmission, Chain of infection; Endemic, Sporadic, Hyperendemic.	2. Learn about disease causation and transmission.
C. Measures of disease frequency: Basic tools of measurement; Rate, attack rate, prevalence rate, case-fatality rate ;Ratio; Proportion; Morbidity measurement tools; Incidence proportion and incidence rate; Point Prevalence, Period Prevalence; Mortality measurement.	3. Understand the measures of disease frequency.
D. Epidemiological methods: Descriptive, analytical, observational and experimental studies, statistics in epidemiologic studies; Critically evaluate the validity of proposed and completed studies; Estimation of risk, Odds Ratio (OR), Relative Risk(RR), Attributable Risk(AR), Population Attributable Risk (PAR); Masking.	4. Learn different types of epidemiological studies.
E. Errors in epidemiology: Random error and bias; Confounding; potential sources of bias and confounding stratification, matching, and statistical adjustment for control of confounding; Interaction.	5. Understand the errors in epidemiology.
F. Epidemic Disease Occurrence: Epidemic, Outbreak, Cluster; Pandemic, Notable Past Pandemics, pandemic alert system, Phases ofPandemic, Pandemic Preparation; Isolation, Quarantine.	6. Know history and Level of disease occurrence.
G. Epidemiological surveillance: Definition, History of surveillance, Types and objectives of surveillance, Elements of a surveillance system, Approaches of surveillance, Analysis, Interpretation and Presentation of surveillance data, Attributes of surveillance; surveillance bias; Epidemiological surveillance in developing countries.	7. Learn about the surveillance method.
H. Screening: Basic concept of screening; Quality of screening tools, validity of screening test, reliability of screening test.	8. Learn about the screening method.
I. Ethical issues in epidemiology: Informed consent, confidentiality, respect for human rights, scientific integrity.	9. Understand the ethical issues in epidemiology.
Recommended Readings:	

1. Gordis L. (2018) Epidemiology, 6th Edition, Elsevier Saunders, Philadelphia
2. Ann Aschengrau, 2018, Essentials of Epidemiology in Public Health, 4 edition.
3. Rothman, Kenneth J., Sander Greenland, and Timothy L. Lash. 2012. Modern Epidemiology, 3rd edition (mid-cycle revision). New York: Lippincott Williams & Wilkins.
4. Bonita, R., Beaglehole, R. and Kjellström, T. 2006 (2nd Ed.). Basic Epidemiology, World Health Organization. WHO Library Cataloguing-in-Publication Data.
5. Lilienfeld, D. E. and Stolley, P. D. 1994 (4th Ed.). Foundations of Epidemiology. Oxford University Press.

PHI 1203: Biostatistics	**Credit Hour: 03**	**Marks: 100**
Rationale: Statistics has played a critical role in public health research and practice. This course presents a sophisticated introduction to the concepts and methods of biostatistical data analysis. Statistics is a correct process by which we make decisions and predictions based on data. This course is aimed at gathering clear knowledge about the organization, summarization, and presentation of heath related data to make correct decisions.		
Course Objectives: This course will help the students to – 1. understand the basic concepts of biostatistics; 2. develop skills how to organize, summarize, and visualize data; 3. know how to calculate different measures of central tendency; 4. describe data by using measures of variation such as range, variance, and standard deviation; 5. understand the basic concepts of probability; 6. understand the relationship between two variables via correlation analysis; 7. demonstrate a knowledge of the four basic sampling methods.		
Course Content	**Intended Learning Outcomes (ILOs)**	
	By the end of this course students will be able to –	
A. Introduction: Scope of biostatistics; Population and Sample; Variables; Types of variables; Scales of measurements.	1. Understand the basic concepts and terminology of biostatistics, including the various kinds of variables and measurement scales.	
B. Organizing and graphing data: Construction of frequency distribution table for qualitative data and quantitative data; Different types of graphical presentation.	2. Use appropriate techniques to organize, summarize, and visualize data with interpretation.	

C. Measures of central tendency: Mean; Median; Mode; Geometric Mean and Harmonic mean both for ungrouped and grouped data; Trimmed mean; Box-and-Whisker Plot.	3. Calculate and interpret measures of central tendency such as the mean, median, and mode.
D. Measures of dispersion: Range; Interquartile range; Mean deviation; variance; Standard Deviation; Standard Error; Coefficient of variation; Chebyshev's Theorem; Empirical (Normal) rule; Measures of Position: Decile, Percentile, Quartile Standard Score or Z Score, Outlier, Measures of Skewness and Kurtosis.	4. Compute appropriate measures of dispersion, such as the range, variance, and standard deviation.
E. Probability: Sample Spaces; Event; Equally likely event; Independent event; Mutually exclusive event; Additive and multiplicative rules of probability; Objective and subjective probability; Marginal and conditional probability; Joint probability; calculating the probability of an event.	5. Understand the meaning of probability and calculate the probability of an event.
F. Correlation and regression analysis: Simple correlation; Rank correlation; Multiple correlations; Simple regression; Simple linear regression model; The least-square method; Coefficient of determination.	6. Understand how regression and correlation differ and when the use of each is appropriate.
G. Sampling techniques: Definition and importance of sampling; Probability sampling: simple random, stratified, cluster and systematic sampling; Non-pprobability sampling: Convenience sampling, Accidental sampling, Purposive sampling, Judgment sampling, Snowballs sampling, Area sampling.	7. Select a simple random sample and other scientific samples from a population of subjects.
Recommended Readings:	
1. Daniel, W. W., Cross C.L. (2013). Biostatistics: A Foundation for Analysis in the Health Sciences, 10th edition, John Wiley & Sons, Inc. 2. Bluman, A. G. (2017). Elementary Statistics: A Step by Step Approach. 10thedition, McGraw Hill. 3. Prem, S. M. (2012): Introductory Statistics, 8th edition, John Wiley and Sons.	

PHI 1204: Fundamentals of Health Informatics	Credit Hour: 02	Marks: 100
Rationale: In this era, public health is correlated with information technology in different emerging issues. The emerging challenges in the field of public health, understanding the interrelation between information technology and health science has become a basic need. This course is aimed to knowledge about computer system and also creates information technology related knowledge in relation to different health aspects.		
Course Objectives: This course will help the students to – 1. understand preliminary knowledge about computer; 2. explain about memory unit of a computer system; 3. develop a knowledge to work with system software and application software; 4. develop a programming knowledge to solve mathematical and biological problems; 5. discuss perceptual knowledge about computer networks and its phenomenon; 6. be familiar with various application software associated with public health informatics; 7. explain health informatics in public health settings.		
Course Content	**Intended Learning Outcomes (ILOs)**	
	By the end of this course students will be able to –	
A. Introduction to computer; input and output devices: Basic Organization; Types of Computer; History and generation; input-output operation; BIOS; Input devices; pointing devices; output devices; communication and other peripheral devices.	1. Know the preliminary information about computer.	
B. Memory and storage devices: Memory and its classification; General properties & memory hierarchies; Read Only Memory (ROM); Random Access Memory (RAM); cache memory; virtual memory and secondary memory.	2. Explain about memory unit of a computer system.	
C. Software packages: Types of software, Systems software: Operating system, Editors, Assemblers, Compilers, Interpreters, System Utilities, Application packages: Word processing- popular word processors, Microsoft Word; Desktop publishing- popular DTP package, Spread sheets: popular spread sheets, Microsoft excel; presentation packages-	3. Develop a knowledge to work with system software and application software	

Microsoft power point, Microsoft Visio; Simulation and modelling software.	
D. Programming concept in health informatics: Problem analysis; Basic algorithm principles and flowcharts; steps to build up a software; Qualities of a good algorithm; time complexity and space complexity; Algorithm development and application to biological problems.	4. Develop a programming knowledge to solve mathematical and biological problems.
E. Computer networks: LAN, MAN, WAN, PAN,CAN; Wireless network-Wifi, WiMax, Bluetooth, EDGE; switch, router and hub; Network topology; Introduction to internet, internet protocol, TCP/IP and OSI layer; intranet and extranet; Email and Browsers; Computer security, data security and network security; cryptography; decryption and encryption; plaintext and cipher text; encipher and decipher; Block Cipher, Caesar Cipher, Hill Cipher.	5. Develop perceptual knowledge about computer networks and its phenomenon.
F. Informatics in public health: MySQL/Oracle, GIS, SPSS and Stata in public health informatics; Review of bio-statistical methods in epidemiology; Introduction to bioinformatics and neuro informatics with flow diagram and applications; AI & Robotics;	6. Knowledge about different application software associated with public health informatics.
G. Health informatics and knowledge management: Translational bioinformatics; Competencies; Intelligent health systems; User interface; Interactive systems and human factors; Health communications; Digital imaging; Image informatics; Bio-medical imaging; Application of image informatics.	7. Explain health informatics in public health settings.
Recommended Readings:	

1. Pradeep K. Sinha, Priti Sinha, 2016 (6th ed.), Computer Fundamentals, BPB Publications, ISBN: 9788176567527.
2. Anita Goel, 2010, Computer Fundamentals, Pearson India, ISBN:9788131733097.
3. Amit Sinha, Rakesh K. Bhujade, 2018, Computer Fundamentals and its Application, LAP LAMBERT Academic Publishing, ISBN: 978-3-330-34991-9.
4. B Ram, Sanjay Kumar, 2016 (5th ed.), Computer Fundamentals Architecture and

Organization, New age international publications, ISBN: 9788122436105.
5. David Dagan Feng, 2019 (2nd ed.), Biomedical Information Technology, Academic Press, ISBN: 9780128160343

PHI 1205: Demography and Public Health	Credit Hour: 03	Marks: 100

Rationale: The course introduces the fundamental techniques of demographic analysis. Population composition and change measures will be explained in the course. Measures of mortality, fertility, marriage and migration levels and patterns will be distinct. Life table, standardization and population projection techniques, analyze demographic data and policy making in the context of Bangladesh will also be explored.

Course Objectives: This course will help the students to –

1. understand appropriate techniques to ensure comparability of the measures across population;
2. identify and compare the different sources of demographic data and uses;
3. know the levels, trends and measurement method of mortality among population;
4. execute methods of standardization;
5. construct of life table and Lexis diagram; and
6. analyze typical demographic patterns arising from the data in the context of Bangladesh.

Course Content	Intended Learning Outcomes (ILOs)
	By the end of this course students will be able to –
A. Introduction to demography and public health: Demography- definition, scope, origin; application in the field of public health.	1. Learn the basic information about demography in public health.
B. Basic methods and sources used in demography: Rate, ratio, proportion; Sources of demographic data and their uses; Census; Surveys.	2. Acquire methodological understanding of the structure and dynamics of population change and their uses.
C. Fertility: Definition, levels and trends, Indicators of fertility; Measures of fertility- Total fertility rate (TFR), General fertility rate (GFR), Net reproduction rate (NRR), Age specific fertility rate (ASFR), Order specific fertility rate (OSFR); Replacement	3. Identify levels, trends and indicators of fertility.

level fertility; Standardization.	
D. Mortality: Definition, levels and trends, factors affecting mortality; Measures of mortality- Infant mortality rate (IMR), Fetal death (FD), Neonatal mortality rate (NMR), Maternal mortality rate (MMR). Lexis diagram.	4. Understand the level, trends and measurement method of mortality among population.
E. Migration: Definition, types; Push and pull factors; Cause and effects of migration.	5. Know general information about migration and its causes.
F. Marriage and divorce: Definition, component; Measures of marriage- Total Marriage rate (TMR), General marriage rate (GMR), Age specific marriage rate (ASMR), Order-specific marriage rate (OSMR), Age-order specific marriage rate(AOSMR); Singulate mean age at marriage (SMAM); Crude divorce rate (CDR), General divorce rate (GDR).	6. Identify components and measures of marriage and divorce.
G. Population change and Projection: Levels and trends of population growth-regional, national, global; Doubling time; Different methods of population projection; Uses of projection.	7. Know about the level and trends of population growth and projection.
H. Life table: Definition, types, applications.	8. Recognize the building of a life table.
I. Standardization: Definition, types; Comparing the methods.	9. Able to classify the methods of standardization.
J. Population policies: Population Policies; Strategies and approaches in Bangladesh context.	10. Familiarize with the sources of data available for demographic research, policymaking in the context of Bangladesh.
Recommended Readings:	
1. Charmichael, G. 2001. An Introduction to Demographic Analysis, Australian National University: Canberra. 2. Hinde, A. 1998. Demographic Methods, Arnold Publishers. 3. Haupt, A. and Kane, T. T. 2006. Population Handbook, Population Reference Bureau, Washington, DC. 4. Shyrock S, Siegel JS, Stockwell EG.1976. The Methods and Materials of Demography. Academic Press.	

PHI 1206: Practical: Biochemistry	Credit Hour: 02	Marks: 100
Rationale: This course expands skills of the individuals to address and interpreting Bio-chemistry laboratory tests and procedures with emphasis on those used in Bangladesh. Demonstrate skills in using the modern biochemical appliances; equip themselves with requisite knowledge for higher studies and research. Attain the skill to perform and interpret the common biochemical tests in the diagnosis of diseases.		
Course Objectives: This course will help the students to – 1. perform different biochemical tests according to given method and manual; 2. know the clinical indication of performing biochemical tests; 3. interpret biochemical values to apply in clinical situations.		

Course Content	Intended Learning Outcomes (ILOs)
	By the end of this course students will be able to –
Basic of biochemistry practical:	
A. Identification of laboratory glass wares and equipment.	1. List the laboratory hazards and the precautions to prevent them
B. Preparation of solutions. Preparation of different types of buffer, determination of their P^H and adjust its p^H if required.	2. Prepare different type of standard solution from supplied solute, solvent and standard solution and determine their p^H.
C. Photometry, Estimation, demonstration of technique, calculation and interpretation of result.	3. Identify different parts of photoelectric colorimeter. Demonstrate its technique and the basic principle of calculation.
Biological macromolecules tests:	
D. Qualitative and tests for identification of carbohydrates, amino acids, lipids and oils. Quantitative estimation of sugars, amino acids and proteins.	4. Biological Macromolecules Identification and estimation.
Biochemical tests:	
E. Blood glucose estimation; Serum cholesterol estimation; Serum urea; Serum	5. Perform different biochemical tests according

creatinine; Serum total protein; Serum bilirubin; Abnormal constituents of urine and their clinical significance.	to given method and manual
Recommended Readings:	
1. Carl A. Burtis, Edward R. Ashwood, David E. Bruns. Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics. 2008. Saunders Elsevier publisher. 2. Prem Prakash Gupta PhD, Neelu Gupta PhD. Essentials of Practical Biochemistry (2016). Jaypee Brothers. ISBN, 9789351529941.	

PHI 1207: Practical: Health Informatics	**Credit Hour: 02**	**Marks: 100**
Rationale: As different emerging challenges in the field of public health, understanding the interrelation between information technology and health science has become a basic need for dealing. This course is aimed to create information technology related practical knowledge in relation to different health aspects.		
Course Objectives: This course will help the students to – 1. give a broad outline of Operating Systems as Windows and Linux environment; 2. grow the skill to utilize MS-Office software (MS word, MS Excel and MS PowerPoint); 3. develop the elementary knowledge of IP addresses, internet and World Wide Web; 4. familiarize students about the HTML web programming; 5. promote the programming language to implement the basic algorithm and biological algorithm; and 6. familiarize students about the MATLAB programming.		
Course Content	**Intended Learning Outcomes (ILOs)**	
	By the end of this course students will be able to –	
A. Operating System: Introduction to Windows/ Linux environment.	1. Understand the setup and installation procedure of Windows and Linux operating system.	
B. Microsoft Office: MS-Word; MS-Excel and MS-Power point.	2. Capable to use and works in MS word, MS Excel and MS PowerPoint.	
C. Computer Network: Internet, IP addressing and world wide web; know IP address and ping; remote login; video	3. Knowledgeable about computer network phenomena.	

conferencing.	
D. Web programming: Website design using HTML.	4. Capable to personal web site design using HTML.
E. Programming language: Develop basic algorithms in C/C++ programming language. Health related and disease-based computation in C/C++.	5. Develop basic algorithms in C/C++ programming language using tools.
F. MATLAB programming: Knowledgeable about MATLAB programming in bio-medical imaging.	6. Knowledgeable about MATLAB programming.

Recommended Readings:

1. Joan Lambert, Curtis Frye, 2018 (1st ed.),Microsoft Office 2019 Step by Step,Microsoft Press, ISBN:978-1509307685.
2. LutfarRahman,M. Shamim Kaiser, M. Arifur Rahman and M. Alamgir Hossain, 2017 (1st ed.), Computer Fundamentals and ICT,Daffodil International University Press, ISBN: 9789843416083.
3. E. Balagurusamy, Programming in ANSI C, 2008 (6thed.)Tata McGraw-Hill Education, ISBN: 9780070648227.
4. Md. Kamruzzaman Niton,2016 (4th ed.) Computer Programming Languages for Everyone:C, GaynkushProkashoni, ISBN: 984-8485-29-5.
5. Paul Gibbs,2016(3rd ed.) HTML Beginners – Basics Of Web Design, Paul Gibbs Publisher,ISBN: 978-0-9928697-3-1

PHI 1208: Field Work: Demography and Public Health	**Credit Hour: 02**	**Marks: 100**

Rationale: Demography is concerned with the growth and distribution of population. The importance of demography in public health is clear for its scope. Through this course students will be able to apply acquired theoretical expertise in practical way and analyze the interlinkages between demography and health including fertility, sexual behavior, ageing, health inequalities and life expectancy how such changes shape social, economic, and political processes and outcomes at the local, national, and international level.

Course Objectives: This course will help the students to –

1. become familiar with appropriate sources of data, perform basic demographic analyses using various techniques and ensure their comparability across populations;

2. impart practical knowledge and skills of demographic and health data sources; and 3. apply basic demographic indicators, population projection calculations, analysis and interpretation.	
Course Content	**Intended Learning Outcomes (ILOs)**
	By the end of this course students will be able to –
A. Preparation of a demographic survey questionnaire; Pre-testing of a demographic survey questionnaire; Data Collection using a demographic survey questionnaire; Descriptive demographic data analysis.	1. Apply scientific and ethical approach of collecting demographic data and Compute and explain estimates, projections and demographic indices
B. Analysis level and trends of fertility in Bangladesh using Bangladesh Population Census data.	2. Get acquainted with demographic measurements, theories, population trends, transitions and patterns.
C. Analysis level and trends of total fertility rate in Bangladesh using Bangladesh Demographic and Health Survey (BDHS) data.	3. Realize practically various factors associated with population structure, composition and changes and explain the country's population policies
Recommended Readings:	
1. Epidemiology and Demography in Public Health, Japhet Killewo Kristian Heggenhougen Stella R. Quah, 1st edition.	

PHI 1209: Viva Voce	**Credit Hour: 02**	**Marks: 100**