

**Curriculum framework,
Ordinance,
Scheme of Examination
for Four Years
Bachelor in
Public Health Sciences (BPHS)**



**University Institute of Public Health Sciences,
Maharshi Dayanand University,
Rohtak, Haryana**

2024-25

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Background

India, with a population exceeding 1.35 billion, is witnessing rapid economic and societal transformations. While the nation strides towards becoming one of the world's largest economies, it grapples with challenges in global Human Development Index rankings, primarily stemming from inadequate health and education services at the grassroots level. Noteworthy strides have been made in medical education and clinical services, both in the private and public spheres, achieving global benchmarks in various domains. Nonetheless, the public health sector still lacks sufficient institutions dedicated to advancing Public Health Education and Research, hindering the development and implementation of transformative health policies and practices. The dearth of expertise in public health adversely impacts policy formulation, program design, implementation, evaluation, and innovative problem-solving initiatives.

Furthermore, India is undergoing a swift health evolution, contending with unresolved issues such as communicable diseases, malnutrition, risky pregnancies and births, alongside the burgeoning epidemic of non-communicable diseases, collectively posing a significant threat to the nation's health and progress. Consequently, there's a pressing need for a unified Public Health initiative to establish healthcare systems meeting global standards and attaining Sustainable Development Goals (SDGs). This entails ensuring efficient delivery of cost-effective interventions for health promotion, disease prevention, and accessible diagnostic and therapeutic healthcare. Achieving this goal necessitates cultivating a proficient and inventive workforce exclusively dedicated to serving as public health specialists.

Scope and rationale

In recent times, there has been a growing demand for Public Health professionals not only in India but also across the globe. The Government of India's initiative establishing more than 170,000 Health and Wellness Centres as part of the Ayushman Bharat Scheme (2018) is expected to create a substantial demand for such professionals. Additionally, under the National Health Mission (NHM), Indian states are being encouraged to develop separate Public Health Cadres, leading to increased opportunities. Many state governments are already in the process of establishing these cadres. Consequently, there will be abundant opportunities for health professionals specializing in Public Health in the coming years, as evidenced by the job trends depicted in the figure below. Moreover, numerous UN and NGO institutions have begun hiring Public Health professionals, underscoring the urgent need to prepare a trained workforce in this field.

The university

Established in 1976, Maharshi Dayanand University, Rohtak, was conceived as a residential university aimed at fostering interdisciplinary higher education and research, particularly in environmental, ecological, and life sciences. Since its inception, the university has made significant strides and is now on its way to becoming a leading educational institution in the country. Evolving into a teaching-cum-affiliating university, it boasts a commendable track record in academics, research, literary and cultural endeavours, and sports. Presently, the university comprises 42 Post-Graduate Departments and 12 Faculties. Notable attributes include outstanding standards of teaching and research, a well-qualified faculty, efficient administrative processes, a vibrant academic atmosphere, robust campus life, strong national and international ties, punctual conduct of examinations and timely result declarations, ample opportunities for holistic student development, a focus on serving rural, female, and marginalized communities, and an e-governance-driven administrative framework. This progress was recognized when the university attained an 'A+' grade from NAAC in March 2019. Spread across a spacious campus, the university offers excellent infrastructure and essential student support services. It's beautiful landscaping adds to its allure. Accommodation is provided for 2500 male and an equal number of female students, and the campus boasts top-notch computer and network facilities. Moreover, strategic partnerships with national and international academic and research organizations have been established for collaborative academic and research initiatives. With its overarching commitment to excellence and a global perspective, coupled with a deep dedication to social and community causes, Maharshi Dayanand University is poised to emerge as a trailblazing institution in the years to come.

University Institute of Public Health Sciences

In alignment with the esteemed traditions and values of the University, the University Institute of Public Health Sciences has been established with the mission to provide top-tier education aimed at cultivating skilled professionals to meet both current and future demands of our nation. The programs offered by the institute are meticulously designed to cater to the needs of society while adhering to the guidelines set forth in the National Education Policy (NEP-2020). With a commitment to excellence, the institute ensures the delivery of high-quality course content facilitated by seasoned faculty members and industry experts, with a strong emphasis on practical training and hands-on experience. Serving as a hub for collaboration, the institute seeks to engage with institutions nationwide to foster mutual growth and advancement. Public health programs are poised to play a pivotal role in addressing the healthcare challenges of our nation, and the institute is dedicated to nurturing competent professionals in this field. Furthermore, in line with the principles outlined in the National Education Policy (NEP-2020), there is a

strong emphasis on multidisciplinary programs, which have the potential to tackle societal issues on a broader scale.

Vision, mission and objectives

Vision

Creating competent, integrated, efficient and context-sensitive Public Health Professionals for empowering health system

Mission

To improve the health of the diverse communities including rural, underserved, and global population through education, skill, research, outreach services, and creative partnerships.

Objectives

To develop Public Health professionals who shall:

- Apply the knowledge of Public Health Sciences to the community, health care delivery, research and population-based community health initiatives
- Ready to approach and address public health challenges in terms of Health Promotion, Disease Prevention and achieving wellness of the society
- Promote healthy lifestyles, research disease epidemiology and injury prevention as well as detect, prevent and respond to communicable diseases (including outbreaks) and non-communicable diseases
- Investigate disease outbreaks, their determinants and risks to improve health care delivery as well as quality and to influence policies and -programs

University Institute of Public Health Sciences, Maharshi Dayanand University, Rohtak



Curriculum framework for Four Years Bachelor in Public Health Sciences (BPHS)

Semester	Discipline-Specific Courses (DSC) /Major Course	Minor (MIC)/Vocational (VOC)/ Skill Enhancement Courses (SEC)/ Internship	Multidisciplinary courses (MDC)	Ability Enhancement courses (AEC)	Dissertation	Value-Added Courses (VAC)	Total Credits
I	DSC-A1 @ 4 credits DSC-A2 @ 4 credits	MIC1@4 credits	MDC1 @ 3 credits	AEC1 @ 2 credits	--	VAC1 @ 2 credits	22
		SEC1@ 3 credits					
	Human Anatomy, Physiology and Biochemistry (24IPHS401DS01)	To be chosen from the courses offered by other streams	To be chosen from the courses floated by the University	To be chosen from the courses floated by the University	--	To be chosen from the courses floated by the University	22
	Basics of Public Health and Nutrition (24IPHS401DS02)	Basic Laboratory Science Practicals (24IPHS401SE01)					
II	DSC-A3 @ 4 credits DSC-A4 @ 4 credits	MIC2@4 credits	MDC2 @ 3 credits	AEC2 @ 2 credits	--	VAC2 @ 2 credits	22
		SEC2@ 3 credits					
	Introduction to Healthcare Delivery System (24IPHS402DS01)	To be chosen from the courses offered by other streams	To be chosen from the courses floated by the University	To be chosen from the courses floated by the University		To be chosen from the courses floated by the University	22
	Basics of Health Promotion (24IPHS402DS02)	Practical aspects of human disease related assays/tests (24IPHS402SE01)					
Students exiting the programme after securing 48 credits including 4 credits of summer internship will be awarded "UG Certificate in Public Health"							

III	DSC-A5@ 4 credits DSC-A6@ 4 credits	MIC3@4 credits	MDC3 @ 3 credits	AEC3 @ 2 credits	--	VAC3 @ 2 credits	22
		SEC3@ 3 credits					
	Epidemiology, Biostatistics and Population Science (25IPHS403DS01)	To be chosen from the courses offered by other streams	To be chosen from the courses floated by the University	To be chosen from the courses floated by the University		To be chosen from the courses floated by the Universit y	22
	Environmental Health and Climate Change (25IPHS403DS02)	Practical training and visits in healthcare facilities (25IPHS402SE01)					
IV	DSC-A7@ 4 credits DSC-A8@ 4 credits DSC-A9@ 4 credits DSC-A10@ 4 credits	MIC4 (VOC) @4 credits	--	AEC4 @ 2 credits	--	VAC4 @ 2 credits	24
	Public Health Nutrition (25IPHS404DS01)	To be chosen from the courses offered by other streams	--	To be chosen from the courses floated by the University	--	To be chosen from the courses floated by the Universit y	24
	Communicable and Non-communicable Diseases (25IPHS404DS02)						
	Reproductive, Maternal, Neonatal, Child and Adolescent Health (25IPHS404DS03)						
	Social and Behavioural Sciences (25IPHS404DS04)						
Students exiting the programme after securing 94 credits including 4 credits of summer internship will be awarded "UG Diploma in Public Health"							
V	DSC-A11@ 4 credits DSC-A12@ 4 credits DSC-A13@ 4 credits DSC-A14@ 4 credits	MIC5 (VOC) @4 credits	--	--	--	--	24
		Internship @4 credits					
	Public Health Management (26IPHS405DS01)	To be chosen from the courses offered by other streams	--	--		--	24

	Mental Health (26IPHS405DS02)						
	Vaccines, Drugs and Toxicology (26IPHS405DS03)						
	Occupational Health (26IPHS405DS04)	Internship @4 credits (26IPHS405IN01)					
VI	DSC-A15@ 4 credits DSC-A16@ 4 credits DSC-A17@ 4 credits DSC-A18@ 4 credits	MIC6 (VOC) @4 credits SEC4@ 2 credits	--	--	--	--	22
	Health Policy, Planning and Regulation (26IPHS406DS01)	To be chosen from the courses offered by other streams	--	--		--	22
	Health Informatics (26IPHS406DS02)						
	Health Economics and Financing (26IPHS406DS03)	Project/ Field work @ 2 credits (26IPHS406PD01)					
	Basics of Public Health Research (26IPHS406DS04)						
<p>Students exiting the programme upon securing 136 credits will be awarded “Bachelor in Public Health”</p> <p>Four credits of Internship earned by a student during summer internship after 2nd Semester or 4th Semester will be counted in 5th Semester of a student who pursue 3 years UG degree programme without taking exit option.</p>							
VII	DSC-H1@ 4 credits DSC-H2@ 4 credits DSC-H3@ 4 credits DSC-H4@ 4 credits DSC-H5@ 4 credits	SEC4@4 credits OR MIC7 (VOC) @4 credits OR Internship@4 credits	--	--	--	--	24

	Health Geography and International Health (27IPHH407DS01)	Internship (27IPHH407IN01)						24
	Health Promotion Approaches, Methods and evaluation (27IPHH407DS02)							
	Roles and responsibilities of NGO's, CBOs, iNGOs (27IPHH407DS03)							
	Laws, Acts and Ethics in Public Health (27IPHH407DS04)							
	Social and Behavioral change communication (27IPHH407DS05)							
VIII (4 year UG Hon.)	DSC-H6@ 4 credits DSC-H7@ 4 credits DSC-H8@ 4 credits DSC-H9@ 4 credits DSC-H10@ 4 credits	SEC4@4 credits OR MIC7 (VOC) @4 credits OR Internship@4 credits	--	--	--	--		24
	Design and Methods of Health Surveys (27IPHH408DS01)	Current issues in Public Health (Seminar/ Assignments/GD) @4 credits (27IPHH408SE01)						24
	Health Mapping and GIS application in health (27IPHH408DS02)							
	Advanced Epidemiology and Biostatistics (27IPHH408DS03)							
	Food Toxicology and Food Safety (27IPHH408DS04)							

	Water Sanitation and Hygiene (WASH) (27IPHH408DS05)						
VIII (4 year UG Hon. With Research)	DSC-H6@ 4 credits DSC-H7@ 4 credits	SEC4@4 credits OR MIC7 (VOC) @4 credits OR Internship@4 credits	--	--	Research Project/ Dissertation @ 12 credits	--	24
	Design and Methods of Health Surveys (27IPHH408DS01)	Current issues in Public Health (Seminar/ Assignments/GD) (27IPHH408SE01)			Research Project/ Dissertation @ 12 credits (27IPH H408PD 01)		
	Health Mapping and GIS application in health (27IPHH408DS02)						

Regulations Governing Four Years Bachelor in Public Health Sciences (BPHS)

Eligibility conditions for admission

Minimum age of 17 years by admission or before December 31st of the joining year. Must have individually passed Physics, Chemistry, Biology/Biotechnology, and English. Minimum aggregate of 50% in Physics, Chemistry, and Biology/Biotechnology.

Must have a valid NEET qualified score. The admission shall be made on merit of the NEET score. AND/OR Based on merit of 10+ 2 with Science subjects. AND/OR An entrance examination conducted by the university for the admission.

The reservation policy of Haryana for admission in all the programs will be applicable. Other conditions of the admissions will be applicable as per university admission guidelines.

Total Intake = 30 students

Duration of the Course:

Bachelor in Public Health Sciences (BPHS) shall be of Four Years duration having 8 Semesters of teaching and training. The program shall have an option of exit after each year successful completion awarding,

- Certificate in public health after first year
- Diploma in public health after two years
- Bachelor degree in public health after three years,
- Option of choosing UG Hons. degree and UG Research Degree options and award thereof

The credits to be awarded shall be as per university regulations. See details in curriculum framework for further details.

Medium of Instruction and Examination shall be English.

Requirements to Complete the Course:

There will be requirement to earn necessary credits to obtain the certificate, diploma or degrees at UG and PG levels. Please see details in curriculum framework.

Learning outcomes

Program graduates shall be able to:

- Use epidemiologic methods to analyze patterns of disease and injury and discuss application to control problems
- Implement, interpret and analyze data from public health surveillance activities
- Understand the relationship between environmental factors and community health; discuss remediation for environmental health problems
- Identify and apply appropriate statistical methods to analyze administrative data and describe a Public Health problem
- Demonstrate the ability to apply principles of leadership, policy development, budgeting and program management in the planning, implementation and evaluation of health programs for individuals and populations.
- Address behavioral, social and cultural factors that impact individual and population health and health disparities over the life course
- Use research tools and analytical methods to critically analyze, monitor and assess the health status of populations
- Demonstrate effective communication skills, orally and in writing
- Describe and discuss essential services that Public Health programs provide to protect and improve the health of populations
- Interpret the impact of policies and legislation on individual and population health
- Understand cultural differences among populations and interact sensitively, effectively, and professionally with persons from diverse backgrounds
- Compare and contrast health challenges encountered in different regions across the globe and understand the variety of strategies employed to address them.

Training, Teaching and Learning Activities:

A candidate pursuing the course shall work in the Institute as a full-time candidate. No candidate shall join any other course of study or appear for any other examination conducted by this university or any other university in India or abroad during the period of study.

Every candidate shall take part in seminars, group discussions etc. Every candidate shall attend teaching and learning activities during each semester as prescribed by the Institute and not absent himself /herself without valid reasons.

A list of teaching and learning activities designed to facilitate acquiring of essential knowledge and skills outlined is given below:

The theory classes shall be equally blended with various practical applications and group activities such as:

1. Assignment
2. Group Discussions
3. Role Plays
4. Workshops
5. Field Visit (Studies)

All these are aimed for the overall development of the emerging health workers, critical analysis and assessment of situations, creative thinking and proactive measures towards system management

Lectures: For all subjects lectures shall be conducted by the faculty.

Field Visits: Health Sub-Centre (HSC), Primary Health Centre (PHC), Community Health Centre (CHC), Health and Wellness Centre (HWC), District Hospital (DH), , Anganwadi, DHO office, Govt and Private Hospitals and Medical Colleges, , PGIMS, Sewage treatment plant, Water purification plant, Bio-medical Waste Management Units/Plants, milk dairy, Nearby industries, Pollution Control Board, and other institutions of Public Health importance.

Regulations regarding,

1. Attendance requirements
2. Course breakup of internal and external components
3. Evaluation criteria for internal and external components
4. Promotion criteria
5. Internship rules and guidelines
6. Field visits rules and guidelines

Other requirements and guidelines will be applicable as per “Common Ordinance” prescribed by the university and subsequent amendments from time to time. In any case, where the common ordinance is silent or not specific, the Institute can device the mechanism at its own level.

SCHEME OF EXAMINATION

Theory:

Each theory paper shall have components of internal and external marks in the break up of 30 and 70 marks respectively.

The internal marks of 30 shall have components of :

- Sessional marks: 20
- Attendance marks: 5 and
- Assignments, Presentations, student teacher interaction: 5 Marks

The pattern of Question Papers for End-Semester theory examinations shall be as under:

Question 1: Answer to Question no. 1 shall be compulsory short answer type questions from all units

Question 2 :Two questions from Unit-I and the student should answer one question

Question 3 : Two questions from Unit-II and the student should answer one question

Question 4 : Two questions from Unit-III and the student should answer one question

Question 5 : Two questions from Unit-IV and the student should answer one question

All the questions shall carry equal marks.

Practical:

Each practical paper shall have components of internal and external marks in the break up of 30 and 70 marks respectively.

The internal marks of 30 shall have components of :

- Attendance marks: 5 and Practical Assignments, Practical file : 25 Marks

The pattern of Question Papers for End-Semester Practical examinations shall be as under:

Synopsis	:	15 marks
Experimental	:	45 marks
Viva-voce	:	10 marks

The evaluation criteria of Field visits, Internships, research project/dissertations shall be as per university ordinance.

SCHEME OF EXAMINATION

Semester I

Course Code	Paper	Internal marks	Max. University marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
24IPHS401DS01	Human Anatomy, Physiology and Biochemistry	30	70	100	40	4	4 hrs/wk
24IPHS401DS02	Basics of Public Health and Nutrition	30	70	100	40	4	4 hrs/wk
24IPHS401SE01	Basic Laboratory Science practicals	25	50	75	30	3	6 hrs/wk
-	Minor (MIC)/Vocational courses (VOC)*	30	70	100	40	4	4 hrs/wk
-	Multidisciplinary courses (MDC)*	25	50	75	30	3	3 hrs/wk
-	Ability Enhancement courses (AEC)*	15	35	50	20	2	2 hrs/wk
-	Value- Added Courses (VAC)*	15	35	50	20	2	2 hrs/wk
Total				550	--	22	25 hrs/wk

*Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Value-Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

Semester II

Course Code	Paper	Internal marks	Max. University marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
24IPHS402DS01	Introduction to Healthcare Delivery System	30	70	100	40	4	4 hrs/wk
24IPHS402DS02	Basics of Health Promotion	30	70	100	40	4	4 hrs/wk
24IPHS402SE01	Practical aspects of human disease related assays/tests	25	50	75	30	3	6 hrs/wk
-	Minor (MIC)/Vocational courses (VOC)*	30	70	100	40	4	4 hrs/wk
-	Multidisciplinary courses (MDC)*	25	50	75	30	3	3 hrs/wk
-	Ability Enhancement courses (AEC)*	15	35	50	20	2	2 hrs/wk
-	Value- Added Courses (VAC)*	15	35	50	20	2	2 hrs/wk
Total				550		22	25 hrs/wk

*Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Value-Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

Semester III

Course Code	Paper	Internal marks	Max. University marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
25IPHS403DS01	Epidemiology, Biostatistics and Population Science	30	70	100	40	4	4 hrs/wk
25IPHS403DS02	Environmental Health and Climate Change	30	70	100	40	4	4 hrs/wk
25IPHS403SE01	Practical training and visits in healthcare facilities	25	50	75	30	3	6 hrs/wk
-	Minor (MIC)/Vocational courses (VOC)*	30	70	100	40	4	4 hrs/wk
-	Multidisciplinary courses (MDC)*	25	50	75	30	3	3 hrs/wk
-	Ability Enhancement courses (AEC)*	15	35	50	20	2	2 hrs/wk
-	Value- Added Courses (VAC)*	15	35	50	20	2	2 hrs/wk
Total				550		22	25 hrs/wk

*Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

Semester IV

Course Code	Paper	Internal marks	Max. University marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
25IPHS404DS01	Public Health Nutrition	30	70	100	40	4	4 hrs/wk
25IPHS404DS02	Communicable and Non-communicable Diseases	30	70	100	40	4	4 hrs/wk
25IPHS404DS03	Reproductive, Maternal, Neonatal, Child and Adolescent Health	30	70	100	40	4	4 hrs/wk
25IPHS404DS04	Social and Behavioural Sciences	30	70	100	40	4	8 hrs/wk
-	Minor (MIC)/Vocational courses (VOC)*	30	70	100	40	4	4 hrs/wk
-	Ability Enhancement courses (AEC)*	15	35	50	20	2	2 hrs/wk
-	Value- Added Courses (VAC)*	15	35	50	20	2	2 hrs/wk
Total				600	--	24	28 hrs/wk

*Minor (MIC)/Vocational (VOC), Ability Enhancement courses (AEC), Value- Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

Semester V

Course Code	Paper	Internal marks	Max. University marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
26IPHS405DS01	Public Health Management	30	70	100	40	4	4 hrs/wk
26IPHS405DS02	Mental Health	30	70	100	40	4	4 hrs/wk
26IPHS405DS03	Vaccines, Drugs and Toxicology	30	70	100	40	4	4 hrs/wk
26IPHS405DS04	Occupational Health	30	70	100	40	4	4 hrs/wk
-	Minor (MIC)/Vocational courses (VOC)*	30	70	100	40	4	4 hrs/wk
26IPHS405IN01	Internship	Will be evaluated by internal/external experts		100	40	4	8 hrs/wk
Total				600	--	24	28 hrs/wk

*Minor (MIC)/Vocational (VOC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

Semester VI

Course Code	Paper	Internal marks	Max. University marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
26IPHS406DS01	Health Policy, Planning and Regulation	30	70	100	40	4	4 hrs/wk
26IPHS406DS02	Health Informatics	30	70	100	40	4	4 hrs/wk
26IPHS406DS03	Health Economics and Financing	30	70	100	40	4	4 hrs/wk
26IPHS406DS04	Basics of Public Health Research	30	70	100	40	4	4 hrs/wk
-	Minor (MIC)/Vocational courses (VOC)*	30	70	100	40	4	4 hrs/wk
26IPHS406PD01	Project/Field work Project/ Field work (26IPHS406PD01)	As per university rules		50	20	2	4 hrs/wk
Total				550	--	22	24 hrs/wk

Semester VII

Course Code	Paper	Internal marks	Max. University marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
27IPHH407DS01	Health Geography and International Health	30	70	100	40	4	4 hrs/wk
27IPHH407DS02	Health Promotion Approaches, Methods and evaluation	30	70	100	40	4	4 hrs/wk
27IPHH407DS03	Roles and responsibilities of NGO's, CBOs, iNGOs	30	70	100	40	4	4 hrs/wk
27IPHH407DS04	Laws, Acts and Ethics in Public Health	30	70	100	40	4	4 hrs/wk
27IPHH407DS05	Social and Behavioral change communication	30	70	100	40	4	4 hrs/wk
27IPHH407IN01	Internship	As per university rules		100	40	4	8 hrs/wk
Total				600	--	24	28 hrs/wk

Semester VIII
(Bachelor in Public Health Sciences with Hons. Degree option)

Course Code	Paper	Internal marks	Max. University marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
27IPHH408DS01	Design and Methods of Health Surveys	30	70	100	40	4	4 hrs/wk
27IPHH408DS02	Health Mapping and GIS application in health	30	70	100	40	4	4 hrs/wk
27IPHH408DS03	Advanced Epidemiology and Biostatistics	30	70	100	40	4	4 hrs/wk
27IPHH408DS04	Food Toxicology and Food Safety	30	70	100	40	4	4 hrs/wk
27IPHH408DS05	Water Sanitation and Hygiene (WASH)	30	70	100	40	4	4 hrs/wk
27IPHH408SE01	Current issues in Public Health (Seminar/ Assignments/GD)	30	70	100	40	4	4 hrs/wk
Total				600	--	24	24 hrs/wk

Semester VIII
(Bachelor in Public Health Sciences with Research Degree option)

Course Code	Paper	Internal marks	Max. University marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
27IPHH408DS01	Design and Methods of Health Surveys	30	70	100	40	4	4 hrs/wk
27IPHH408DS02	Health Mapping and GIS application in health	30	70	100	40	4	4 hrs/wk
27IPHH408SE01	Current issues in Public Health (Seminar/ Assignments/GD)	30	70	100	40	4	4 hrs/wk
27IPHH408PD01	Research Project/ Dissertation	As per university rule		300	120	12	24 hrs/wk
Total				600	--	24	36 hrs/wk

*Minor (MIC)/Vocational (VOC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

Evaluation of the Internship, field visits and Project Reports

The performance of the candidate will be evaluated who has undergone internship, field visits and dissertation projects. The evaluation shall be done through panel of examiners.

Selection and evaluation process of the courses from other departments/Institutes

To provide flexibility to the students for greater learning as per their choice and interest, the candidates shall be allowed to choose courses offered by other departments/Institutes under various heads i.e. Minor (MIC)/Vocational (VOC) Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Skill Enhancement Courses (SEC)/Value-Added Courses (VAC). The selection criteria of these type of courses and evaluation process shall be as per university guidelines. The definitions of these courses, purpose, nature, outcome and other details are given in **Annexure-2**.

Criteria for Declaring Pass

The registered students shall be awarded certificate, diploma, degrees as per university guidelines applicable. Please see details in curriculum framework.

Graduate attributes

Type of learning outcomes	The Learning outcomes descriptors
Disciplinary and interdisciplinary specific learning outcomes	<ul style="list-style-type: none"> • Comprehensive knowledge and coherent understanding of the chosen disciplinary/interdisciplinary areas. • Practical, professional, and procedural knowledge necessary for performing professional or highly skilled work/tasks related to the field(s) of study • Capacity to go beyond simply copying curriculum content knowledge to create solutions to particular problems
Generic Learning outcomes	<ul style="list-style-type: none"> • Complex problem-solving, Critical Thinking and Creativity • Communication Skills • Analytical reasoning/thinking • Research-related abilities • Coordination and collaboration with others • Value inculcation • Empathy • Autonomy, responsibility, and accountability • Environmental awareness and action • Community engagement and service

Letter Grades and Grade Points: The student's performance in a particular semester is gauged by the Semester Grade Point Average (SGPA), which is calculated from the grades. The Cumulative GPA (CGPA) is based on all grades earned after enrolling in the program of study, while the Semester Grade Point Average (SGPA) is based on grades earned during the current term. University will mention marks obtained in each course and a weighted average of marks based on marks obtained in all the semesters taken together for the benefit of students.

Letter Grade	Grade Point
O (outstanding)	10
A+ (Excellent)	9
A (Very good)	8
B+ (Good)	7
B (Above average)	6
C (Average)	5
P (Pass)	4
F (Fail)	0
Ab (Absent)	0

When students take audit courses, they may be given pass (P) or fail (F) grade without any credits.

Computation of SGPA and CGPA

The UGC recommended the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

The SGPA is the ratio of the sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student,

$$\text{i.e. SGPA (Si)} = \frac{\sum(C_i \times G_i)}{\sum C_i}$$

Where C_i is the number of credits of the i th course and G_i is the grade point scored by the student in the i th course.

Example for Computation of SGPA

Semester	Course	Credit	Letter Grade	Grade point	Credit Point (Credit x Grade)
I	Course 1	3	A	8	3 X 8 = 24
I	Course 2	4	B+	7	4 X 7 = 28
I	Course 3	3	B	6	3 X 6 = 18
I	Course 4	3	O	10	3 X 10 = 30
I	Course 5	3	C	5	3 X 5 = 15
I	Course 6	4	B	6	4 X 6 = 24
		20			139
	SGPA				139/20=6.95

The Cumulative Grade Point Average (CGPA) is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a program, i.e.

$$\text{CGPA} = \frac{\sum(C_i \times S_i)}{\sum C_i}$$

where S_i is the SGPA of the i th semester and C_i is the total number of credits in that semester.

Example for Computation of CGPA

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
Credit: 21	Credit: 22	Credit:25	Credit: 26	Credit: 26	Credit 25
SGPA:6.9	SGPA:7.8	SGPA:5.6	SGPA:6.0	SGPA: 6.3	SGPA 8.0
CGPA= 6.73 $(21 \times 6.9 + 22 \times 7.8 + 25 \times 5.6 + 26 \times 6.0 + 26 \times 6.3 + 25 \times 8.0)/145$					

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

Transcript (Format): University will issue a transcript for each semester as well as a cumulative transcript that reflects performance across all semesters based on the recommendations made above regarding letter grades, grade points, and SGPA and CCPA.

Syllabus and Course contents in Bachelor in Public Health Sciences (BPHS)

Semester-I

Name of the Course	Human Anatomy, Physiology and Biochemistry	Level	Major
Course Code	24IPHS401DS01	Duration and credits	60hrs/4 credits
Max. Marks.	100	Workload	4 Hours/week
Course Objectives:			
To impart fundamental knowledge of the structure, functions of various parts, biochemical processes in various systems of the human body.			
Course Outcomes:			
Upon completion of the course, the student will be able to:			
<ol style="list-style-type: none"> 1. Explain the gross morphology, structure and functions of various organs of the human body. 2. Identify the various tissues and organs of different systems of human body. 3. Describe the various homeostatic mechanisms and their imbalances. 4. Understand the normal development and transition in key functions across life course 5. Understand biochemical processes in various organs of the human body and interpret clinical biochemistry data. 			
Unit - I (15 h)			
<p>General Introduction: Definition of anatomical terminologies. Components of human cell, tissue, organ and their functions. Structural organisation of the human body.</p> <p>Blood (Haematology) Composition and functions of blood. Functions of blood components. Disorders of blood components (Anemia, Leukocytosis/ Leukemia) etc. Hemoglobin: Introduction, functions, NAD value and significance.</p>			

Unit - II (15h)**Musculo Skeletal System**

Overview of Muscle tissues, Skeletal muscle types, Functions of the Skeletal System, Bone Classification and Bone Structure, Different types of joints and their functions and characteristics.

Cardio vascular System

Physiology and Anatomy of Heart, Pulmonary v/s systemic circulation, Functions of CVS.

Endocrine System

Enumeration of different endocrine glands, their position, secretions, and their functions.

Unit - III (15 h)**Respiratory System**

Anatomy of the organs and structures of the Respiratory system, Lungs and its functions.

Digestive System

Overview of the Digestive System, Digestive System Processes and Regulation.

Urinary System

Gross Anatomy of the Kidney, Functions of kidney, ureter, urinary bladder and urethra. Physical characteristics of urine.

Unit-IV (15h)**Central Nervous system**

Different components of nervous system. Identification of different parts of the brain. Function of the Nervous System.

Lymphatic and Immune System

Anatomy of the Lymphatic and Immune Systems, Parts of Lymphatic System, and their functions

Reproductive System

Anatomy, Physiology and biochemistry of male and female Reproductive system.

Embryology and normal development and transition in key functions across life course

The transition in body and physiology in terms of physical growth, reproductive, neurodevelopment, and immunological responses.

Suggested Readings:

1. Ross and Wilson Anatomy and Physiology by Allison Grant Anne Waugh ISBN-9780323834612, Elsevier Publishers, Inc.
2. Understanding Anatomy and Physiology by Gale Sloan Thompson. ISBN-9780803622876. F.A. Davis Company; Mac Win Pa edition
3. Human Physiology by Stuart Ira Fox. ISBN-9780071102070. McGrawHill
4. Applied Anatomy and Physiology by B D Chaurasia. ISBN- 9789390619658. CBS Publishers
5. Introduction to Human Anatomy and Physiology by Eldra Pearl Solomon. ISBN - 9780323239257 Elsevier UK / US

Name of the Course	Basics of Public Health and Nutrition	Level	Major
Course Code	24IPHS401DS02	Duration and credits	60hrs/4 credits
Max. Marks.	100	Workload	4 Hours/week

Course Objectives:

1. To understand the concept of public health and its significance in promoting population health.
2. To explore the historical development of public health and its key milestones.
3. To analyse the core disciplines of public health and approaches of public health practice.
4. To evaluate the sources of global health data and their role in informing public health interventions.

Course Outcomes:

1. Upon completion of the course, the student will be able to:
2. Demonstrate a comprehensive understanding of the definition of health and its determinants, including social determinants of health.
3. Identify the goals of public health and its role in disease prevention and health promotion.
4. Analyse the historical evolution of public health and its impact on contemporary public health policies and interventions.

8. Evaluate the structure and components of public health systems, both in India and globally, and assess the challenges and opportunities in strengthening these systems.

Unit – I (15 h)

Introduction to Public Health and Nutritional relevance:

Definition of health and its determinants, social determinants of health, Introduction to public health and its goals, Role of public health in disease prevention and health promotion, Basic of Public Health Nutrition, Concepts of nutrition and dietetics; nutrition epidemiology; essential nutrients, nutrition-related diseases, and food systems and sustainability; national nutrition programs and policies.

Unit – II (15h)

The Science and Practice of Public Health

Core disciplines of public health: epidemiology, biostatistics, environmental health and occupational health, social and behavioral sciences, nutrition and health interaction, health policy and management; Public health approaches to disease prevention and health promotion; Interdisciplinary nature of public health practice; Public health ethics and professionalism.

Unit – III (15 h)

Global Health and Data Sources

Introduction to global health and data sources: WHO, UNICEF, World Bank, FAO, CDC, ILO, Census, SRS, NFHS, NSSO, SECC etc; Overview of key indicators of population health; Data collection methods and challenges in global health research; Use of health information systems for monitoring and evaluation.

Unit-IV (15h)

Public Health Systems: India and Global Perspectives

Structure and components of the public health system in India; Role of central and state government agencies in public health; Primary healthcare infrastructure and delivery mechanisms; Challenges and opportunities in strengthening the public health system; Overview of global public health initiatives: Primary Health Care; Millennium Development Goals (MDGs), Sustainable Development Goals (SDGs); National Health Policy, Health for All, Achievements and limitations of global health initiatives; Future directions in global public health policy and practice

Suggested Readings:

1. Public Health: What It Is and How It Works by Bernard J. Turnock" ISBN-1284069419, Jones and Bartlett Publishers, Inc.

2. Introduction to Public Health" by Mary-Jane Schneider. ISBN-128419759X. Jones and Bartlett Publishers, Inc.
3. Introduction to Public Health" by Mary Louise Fleming and Elizabeth Parker. ISBN-9780729538909. Churchill Livingstone.
4. Public Health in India: Policy Shifts and Trends (Social Change in Contemporary India) by P. M. Arathi. ISBN- 9354793703. SAGE Publications Pvt. Ltd; 1st edition
5. An Introduction to Community and Public Health by James F. McKenzie and Robert R. Pinger. ISBN - 1284036596 Jones and Bartlett Learning.

Name of the Course	Basic Laboratory Science Practicals	Level	Skill Enhancement Course (SEC)
Course Code	24IPHS401SE01	Duration and credits	90 hrs/3 credits
Max. Marks.	75	Workload	6 Hours/week

Course Overview:

This practical course is designed to introduce first-year public health students from diverse backgrounds to essential laboratory techniques related to human anatomy and physiology. The course aims to develop practical skills, critical thinking abilities, and an understanding of laboratory safety protocols. Through hands-on experiments and demonstrations, students will gain foundational knowledge that will prepare them for further studies in public health.

Course Objectives:

1. To familiarize students with basic laboratory equipment, instruments, and techniques.
2. To develop competency in performing common laboratory experiments in biology.
3. To cultivate an understanding of scientific principles and their application in public health contexts.
4. To instil good laboratory practices, including safety precautions and proper documentation of experimental procedures and results.
5. To enhance critical thinking skills through analysis, interpretation, and communication of experimental data.

Course Outcomes

1. Demonstrate proficiency in the safe handling of laboratory equipment, chemicals, and biological materials, adhering to established safety protocols and regulations.
2. Apply basic principles of biology to conduct laboratory experiments and investigations relevant to public health.
3. Utilize a variety of laboratory techniques and instruments to collect, analyze, and interpret experimental data accurately and systematically.
4. Identify and troubleshoot common issues encountered during laboratory experiments, demonstrating problem-solving skills and adaptability.
5. Communicate experimental procedures, results, and conclusions effectively through written laboratory reports and oral presentations.
6. Apply basic statistical methods to analyze and interpret experimental data, drawing appropriate conclusions and implications for public health practice.
7. Develop a critical understanding of the ethical considerations and implications associated with laboratory research and its application in public health contexts.
8. Reflect on personal learning experiences and identify areas for further skill development and professional growth in laboratory science and public health.

1. Introduction to Microscopy and Cell Biology

- Experiment 1: Microscopic Examination of Cells
 - Experiment 2: Blood Typing and Blood Cell Count
- #### 2. Musculoskeletal System
- Experiment 3: Muscle Contraction and Fatigue
 - Experiment 4: Cardiovascular Function (Resting Heart Rate and Blood Pressure)
- #### 3. Respiratory and Digestive Systems
- Experiment 5: Cardiovascular Function (ECG)
 - Experiment 6: Respiratory Function (Lung Capacity)
 - Experiment 7: Digestive System Function (Enzymatic Digestion)
- #### 4. Urinary System and Neurological Reflexes
- Experiment 8: Renal Function (Urinalysis)
 - Experiment 9: Neurological Reflexes
- #### 5. Sensory Perception and Endocrine System
- Experiment 10: Sensory Perception (Vision, Taste, Touch)
 - Experiment 11: Endocrine System Function (Hormone Levels)
- #### 6. Reproductive System and Homeostasis
- Experiment 12: Reproductive System Function (Menstrual Cycle)
 - Experiment 13: Homeostasis and Feedback Mechanisms
- #### 7. Data Analysis and Integration
- Data analysis and interpretation of experimental results
 - Integration of concepts from previous experiments
- #### 8. Review and Assessment
- Review of key concepts and experimental techniques

- Practical assessment: conducting a final experiment under supervision
- Course evaluation and feedback session

Suggested Readings (Latest Edition only)

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York
3. Physiological basis of Medical Practice-Best and Tailor. Williams and Wilkins Co, Riverview, MI USA
4. Text book of Medical Physiology- Arthur C, Guyton and John.E. Hall. Miamisburg, OH, U.S.A.
5. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.
6. Textbook of Human Histology by Inderbir Singh, Jaypee brother's medical publishers, New Delhi.
7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brother's medical publishers, New Delhi.
8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi.

Reference Readings (Latest Editions)

1. Physiological basis of Medical Practice-Best and Tailor. Williams and Wilkins Co, Riverview, MI USA
2. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
3. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje, Academic Publishers Kolkata

Semester-II

Name of the Course	Introduction to Healthcare Delivery System	Level	Major
Course Code	24IPHS402DS01	Duration and credits	60hrs/4 credits
Max. Marks.	100	Workload	4 Hours/week
Course Objectives:			

1. To understand the historical development and evolution of healthcare delivery systems.
2. To analyze the structure and components of healthcare delivery systems.
3. To examine the roles and responsibilities of stakeholders within the healthcare system.
4. To evaluate different healthcare delivery models and their implications for patient care and outcomes.

Course Outcomes:

Upon completion of the course, the student will be able to:

1. To understand about various health delivery systems.
2. To understand about various surveys, initiatives and schemes of the Government.
3. To explore healthcare financing mechanisms and their impact on access, quality, and cost of care and health insurances.
4. To understand the regulatory frameworks governing healthcare delivery and their influence on healthcare policies.

Unit - I (15 h)

Introduction to healthcare delivery system

Healthcare organizations and institutions, Primary, secondary, and tertiary care , Integration and coordination of care, Healthcare stakeholders (Patients and families , Healthcare providers, physicians, nurses, allied health professionals, Payers (government, private insurance, employers, Regulators and policymakers), social accountability framework (various community stakeholder linked bodies at various levels).

Unit - II (15h)

Quality and safety in healthcare

Healthcare Quality and Performance (Quality improvement initiatives, Healthcare metrics and benchmarks, Patient safety and risk management. Hand hygiene/Universal precautions, NABH/NABL Accreditation. Indian Public Health Standards at -Sub-centres (SC), Primary health centres (PHC), Community health centres (CHC).

Unit - III (15 h)

Healthcare Delivery Models and Financing

Overview of health economics and financing, Fee-for-service vs. value-based care, Managed care organizations, out of pocket expenses, Accountable care organizations, Patient-centric medical homes, Public vs. private health financing, Healthcare economics and cost containment strategies.

Unit-IV (15h)**Healthcare Policy and Regulation and global perspective**

Healthcare reform initiatives, Healthcare laws and regulations, Ethical considerations in healthcare delivery, Comparative healthcare systems, Healthcare disparities and access issues, international healthcare delivery innovations, Emerging Trends in Healthcare Delivery, Future Directions and Challenges

Suggested Readings:

1. Healthcare in India: A Comprehensive Analysis of Policy and Systems by Rama V. Baru, published by Oxford University Press with ISBN 978-0199469543. Sarah Hodges' book
2. Public Health and Private Wealth: Stem Cells, Surrogates, and Other Strategic Bodies by Sarah Hodges' published by Oxford University Press with ISBN 978-0199463374.
3. India's Healthcare Industry: Innovation in Delivery, Financing, and Manufacturing by Lawton R. Burns, Gordon P. Karels, and Vijai Singh, published by Cambridge University Press with ISBN 978-1107196190.
4. Healthcare Management in India: Psycho-social and Neurological Aspects by S. K. Verma and Anil Kumar published by Springer with ISBN 978-9811575484.
5. Healthcare Delivery in India: Potential for Innovation by Kasturi Sen's published by SAGE Publications Pvt. Ltd with ISBN 978-9352807594.

Name of the Course	Basics of Health Promotion	Level	Major
Course Code	24IPHS402DS02	Duration and credits	60hrs/4 credits
Max. Marks.	100	Workload	4 Hours/week

Course Objectives:

1. To introduce students to the fundamental concepts and principles of public health education and communication.
2. To familiarize students with key theoretical frameworks and models used in public health promotion.
3. To equip students with practical skills in designing, implementing, and evaluating public health communication campaigns.

4. **Course Outcomes:**
5. After completion of the course, the student will be able to :
6. Demonstrate an understanding of the key concepts, theories, and principles underlying public health education and communication.
7. Analyze historical and contemporary examples of public health communication initiatives and their effectiveness.
8. Apply social and behavioral theories to the design of health promotion interventions and promotion strategies.
9. Develop skills in audience segmentation, message development, and selection of appropriate promotion channels.
10. Design and implement a public health communication campaign targeting a specific health issue or population group.
11. Reflect on personal learning and growth in understanding the role of communication in promoting health and preventing disease.

Unit - I (15 h)

Introduction to Public Health Promotion

Overview of public health education and promotion. Historical context and evolution of health education to health promotion. Role of communication in health promotion. Key concepts and principles in health promotion and communication. Ethical considerations in public health promotion.

Unit - II (15h)

Theoretical Foundations of Public Health Communication

Social and behavioral theories at macro, meso, and micro levels relevant to public health communication. Stages of health behaviour adoption. Application of theories to health behavior change interventions. Communication models and frameworks in public health (e.g., Diffusion of Innovation Theory, Ecological Model). Understanding audience segmentation and targeting in public health communication campaigns.

Unit - III (15 h)

Strategies and Methods in Public Health promotion

Development and implementation of public health communication campaigns. Selection and use of communication channels (e.g., mass media, social media, interpersonal communication). Designing effective health messages and materials. Use of technology in health communication and behaviour. Understanding behaviour change communication and management. Evaluation methods for assessing the impact of public health communication initiatives. Understanding social and behavioural change communication.

Unit-IV (15h)**Health Literacy and Cultural Competence in Public Health promotion**

Importance of health literacy in effective communication. Strategies for enhancing health literacy among diverse populations. Understanding cultural influences on health beliefs and behaviours. Approaches to culturally competent communication in public health. Addressing health disparities through culturally sensitive messaging and interventions. Understanding the issues related to non-adherence or non-acceptance and societal influences.

Suggested readings:

1. Health Behavior: Theory, Research, and Practice by Karen Glanz, Barbara K. Rimer, and K. Viswanath, published by Jossey-Bass with ISBN 978-1118628980.
2. Social Marketing: Influencing Behaviours for Good by Nancy R. Lee and Philip Kotler, published by SAGE Publications Ltd with ISBN 978-1446275397.
3. Communication for Behavior Change: Volume I: Writing and Producing Radio Dramas by Everett M. Rogers, Arvind Singhal, and Pranav Budhathoki, published by SAGE Publications Pvt. Ltd with ISBN 978-9353289784.
4. Communicating Health: Strategies for Health Promotion by Nova Corcoran and Colleen M. Conway, published by SAGE Publications Ltd with ISBN 978-1529703441.
5. The Health Communication Handbook edited by Kevin B. Wright and Lisa Sparks, published by SAGE Publications Ltd with ISBN 978-0761921609.
6. Health Literacy from A to Z: Practical Ways to Communicate Your Health Message by Helen Osborne, published by Jones & Bartlett Learning with ISBN 978-1449600532.
7. Culture, Health, and Communication: A Sociocultural Perspective edited by Heidi E. Hamilton and Wen-ying Sylvia Chou, published by Routledge with ISBN 978-0415952251.
8. Global Health Communication Strategies in the 21st Century edited by Rachel E. Smith and Kathryn M. DeMaster, published by Jones & Bartlett Learning with ISBN 978-1284099749.

Name of the Course	Practical aspects of human disease related assays/tests	Level	Skill Enhancement Course (SEC)
Course Code	24IPHS402SE01	Duration and credits	90 hrs/3 credits
Max. Marks.	75	Workload	6 Hours/week

Course Overview:

This course focuses on providing practical skills and knowledge necessary for conducting assays and tests related to human diseases in public health settings. Students will learn various laboratory techniques, instrumentation, and methodologies commonly used in diagnosing and monitoring diseases. Emphasis will be placed on hands-on experience, data interpretation, quality control, and ethical considerations in assay testing.

Course Objectives:

1. To understand the principles underlying various assays and tests used in the diagnosis and monitoring of human diseases.
2. To gain proficiency in performing common laboratory techniques and operating relevant instrumentation.
3. To develop skills in interpreting assay results, troubleshooting, and quality control.
4. To explore ethical considerations and regulatory requirements associated with human disease assays and tests.
5. To apply practical knowledge to real-world scenarios in public health settings.

Course Outcomes:

1. Students will demonstrate a comprehensive understanding of the principles underlying various assays and tests used in diagnosing and monitoring human diseases.
2. Students will acquire proficiency in performing common laboratory techniques and operating relevant instrumentation, including molecular, immunological, microbiological, and biochemical assays.
3. Students will demonstrate an understanding of ethical principles and regulatory requirements governing human disease assays and tests, including patient confidentiality, data security, and compliance with relevant regulations.
4. Students will integrate practical knowledge gained from the course into real-world scenarios in public health settings, demonstrating the ability to apply laboratory techniques effectively for disease diagnosis, surveillance, and monitoring.

1. Introduction to Disease Assays and Tests

- Overview of common assays and tests used in diagnosing and monitoring human diseases
- Principles of assay design and execution
- Introduction to laboratory safety and biosafety practices

2. Molecular Techniques

- Polymerase Chain Reaction (PCR)
- Real-time PCR (qPCR)
- Nucleic acid extraction methods
- Gel electrophoresis and DNA/RNA visualization

3. Immunological Assays

- Enzyme-Linked Immunosorbent Assay (ELISA)
- Western blotting
- Flow cytometry
- Immunofluorescence techniques

4. Microbiological Techniques

- Culture-based methods for pathogen identification
- Antimicrobial susceptibility testing
- Microscopic examination of pathogens
- Serological assays for infectious diseases

5. Biochemical Assays

- Enzyme assays
- Spectrophotometry and colorimetric assays
- Chromatographic techniques (e.g., HPLC, GC)
- Mass spectrometry for biomarker analysis

6. Quality Control and Data Interpretation

- Principles of quality control in assay testing
- Statistical analysis of assay data
- Interpretation of assay results and troubleshooting common issues
- Reporting and documentation in laboratory testing

7. Ethical and Regulatory Considerations

- Ethical principles in human disease testing
- Regulatory requirements for laboratory testing (e.g., CLIA, FDA)
- Patient confidentiality and data security
- Case studies and discussion on ethical dilemmas in assay testing

Assessment:

- Practical laboratory exercises and demonstrations
- Written assignments and reports
- Quizzes and examinations
- Participation in class discussions and case studies

Resources:

- Textbooks and scientific literature on assay techniques and methodologies
- Online resources and laboratory manuals
- Guest lectures from experts in the field
- Access to laboratory facilities and instrumentation for hands-on training

Note : Public Health sciences is a dynamic field. Therefore, the syllabus of the remaining courses shall be framed from time to time as per relevant need of the society to impart quality training.